FLIGHT

The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

Feb. 2 ... Lecture, "Some Requirements of the Modern Aeroplane," by Sir R. T. Glazebrook, before Cambridge University Aë.S.

Feb. 3 ... Lectures, "The Use of Meteorology to Aviation," by Maj. Dobson, and "Ground Engineering," by Wing-Com. H. W. S. Outram, before R.Aë.S.

Feb. 9 ... Lecture, "The Napier Lion Engine," by A. J. Rowledge, before Cambridge University Aë.S.

Feb. 16 ... Lecture, "Aerial Manœuvres and Stability," by Prof. L. Bairstow, before Cambridge University Aë.S.

Feb. 17 ... Lecture, "The Handley Page Wing," by F. Handley Page, before R.Aë.S.

Feb. 20–22 Aero Club of France Grand Prix

Feb. 23 ... Lecture, "Possible Developments in Aircraft Engines," by Lieut.-Col. H. T. Tizard, before Cambridge University Aë.S.

Mar. 9 ... Lecture, "The Artificial Control of Weather," by Sir Napier Shaw, before Cambridge University Aë.S.

Mar. 20–22 Aero Club of France Grand Prix

April 20–22 Aero Club of France Grand Prix

June 1 ... Entries Close for Schneider Cup

Sept. 30 ... Provisional Date for Schneider Cup

EDITORIAL COMMENT

THE *Evening News* recently stated in the most emphatic manner that it had been decided to form forthwith—in the early summer of this year—six squadrons of aircraft, to be under the "Territorial Force Associations." All the wider details of organisation were given, it was stated, on "high authority." Whether our contemporary was indulging in a little intelligent anticipation, or whether somebody had been engaged in a "leg-pull," we do not know, but it is a fact that, at present at any rate, to say the least, the report is distinctly premature. The story has been given the usual denial, and it is pointed out that, however desirable such an auxiliary Force might be, the present is not an opportune time to spend money upon it.

A Territorial Air Force?

It does not appear to us that the best way of securing an adequate reserve to the fighting Air Force can best be accomplished under the Territorial scheme. The Air Force partakes far more of the character of the Navy than of the Army, and the scheme of reserves requires to be treated from that point of view. As the R.N.R. is officered and manned by the *personnel* of the mercantile marine, who are actively engaged in the pursuit of their calling and are embodied for a fortnight's training once a year, so the Air Force Reserve could best be supplied. Every inducement should be given to pilots and other essential ranks and ratings engaged in civil aviation to become members of the A.F.R. They should receive a retaining fee, as in the R.N.R., and be called upon in return to undergo a short period of training yearly. By such a method we should secure a highly qualified reserve, actually engaged upon the work they would have to do in war, and at the highest pitch of efficiency it is possible to attain in the case of reserves. On the other hand, if the Territorial system were adopted, we could hardly expect the same pitch of efficiency from pilots and mechanics who were simply called up for a fifteen days' training period in the middle of the summer. Moreover, the naval system would actually cost less money, because the *personnel* called up for training would be automatically attached to active service units possessing all the necessary organisation, and the only additional expense to which the country

would be put would be, in addition to that of the Reserve Department of the Air Ministry for administration, the pay of the officers and men serving. Under the alternative scheme, it would be necessary to provide all the organisation and material of complete aircraft units—obviously a far more expensive matter.

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The Future of the Air

The departure of Mr. Churchill from the War Office and the Air Ministry, which is impending, is leading to considerable discussion as to the desirability of continuing the two offices under a single Minister. So far as can be gathered, the greater volume of opinion in political circles is opposed to the principle, but here we have to reckon with the Prime Minister, who may conceivably have altered the uncompromising attitude he affected when last the matter was debated, but who, on the other hand, may insist upon continuing a system which we are convinced is entirely wrong and vicious in its effects.

Among those having active association with aviation, service or civil, there is only a single opinion, and that is that the time has come when the Air *must* have a single Minister who is able to give undivided attention to flying and its future on both sides of the movement. At the time Mr. Churchill was appointed to the dual office we said all there is to be said of the wrong-headedness of the idea and there is nothing more that can usefully be added to the arguments then adduced. The answer to the proposition is so entirely self-evident that it is hardly necessary to emphasise it, and the real wonder is that so astute a politician as Mr. Lloyd George should have allowed himself to be misled into making the dual appointment. As to that, the reason probably is that he *is* a politician and that he acted from motives of policy alone. However, he is hardly likely to make the same mistake again unless, horrible thought, Sir Eric Geddes should consider that the task of "co-ordinating" transport has been given a sufficient start and believes now that he has a mission to do the same for the Army and the Air Force!

One consequence of the impending changes is that the question of a Ministry of Defence is once more being discussed. General Brancker recently pointed out, in a letter to *The Times*, the desirability of grouping the whole of our defence organisation under one head. As to that, we have a perfectly open mind, as our readers who remember what we have written on this subject on previous occasions will know. General Brancker says, with considerable force, that this would involve the creation of a real Imperial General Staff, on which Navy, Army and Air would be represented, and which would deal with the greater questions of strategy without any bias towards any particular Service or method of warfare. Such a body would have been of incalculable value on the outbreak of war in 1914, when no expert control or co-ordination between Navy and Army was in operation—a deficiency which led to endless overlapping, competition, confusion and waste.

He thinks the time has come for such a change to be fully and seriously considered. There is a growing desire, he says, in the Admiralty to wreck the Air Ministry and revert to the old non-progressive system of having separate naval and military air services. He says, and we agree absolutely, that such a retrograde step would spell ruin to this country in the future and must be resisted at all costs. It will be—but the trouble is the difficulty of discovering in time what service and political "wangling" is going on. We know that there is a very strong reactionary party at the Admiralty, as there is also at the War Office, which desires to go back to the bad old system of pre-1918. Hitherto, they have been headed off, but who knows what may happen if we should get a mere political and complacent figure-head as Air Minister? There is danger in the situation, which will have to be very carefully watched.

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The Value of Air Transport

Two very interesting papers have been read recently, bearing on the relative values of the different methods of transport and with particular reference to the conveyance of passengers and goods by air. One was given by Lord Montagu of Beaulieu before the Royal Aeronautical Society on "A Comparison of the Costs of Transport by Land, Sea and Air," a title which quite adequately explains itself. As we are printing a very full digest of the lecture, there is no need to make quotation from it here. The other paper to which we have referred was read by Capt. Acland, to the members of the Central Asian Society, in which he particularly emphasised the great value of the speed possessed by aircraft and its probable bearing on the affairs of commerce and the world generally.

Judged in the light of pure cost figures, aerial transport hardly compares favourably with other forms of conveyance and may have to remain for a considerable time in that condition. It may be that the progress of invention and development will lead to substantial cost reductions. Indeed, it is not beyond the possibilities that they can be reduced to a figure actually below that of travel by rail or steamship, but in the light of present knowledge that is best left to our hopes. We have, therefore, to look for countervailing advantages which will balance the account and, fortunately, these are not at all difficult to discover. As a matter of fact, we need go no farther than speed to see where the aeroplane and the airship can now, and always will be, able to hold their own in competition.

If any service is to be commercially successful, relying upon speed and certainty alone, it predicates that there must always be a sufficient number of passengers willing to pay higher rates for the sake of that speed. Also, there must be a sufficient goods traffic in addition, and the question which has to be settled is whether or not these conditions exist, or may be anticipated to exist. The answer is given in the figures relating to the cross-Channel services operating from this country and those available in connection with services on the Continent and in America. All these show a steady and progressive increase, demonstrating, we think, that the willingness to pay for speed does exist, while the public is undergoing the necessary education to convince it that not only is aerial travel the fastest form of transport the mind of man can conceive, but that it is equally as safe and as certain as any other. Time is money, and the whole development of communications shows that the truth of this doubtless trite adage is realised to the full, especially by the commerical communities. Else we should not have seen the telegraph, the telephone, wireless and all the rest of the facilities for travel and intercommunication expand as they have, irrespective of cost. Every time we send a telegram we are paying for speed, since it is cheaper to send a letter. It costs less to walk round the corner to speak to a person direct than to telephone



Aviatic Types—Civil and Otherwise

THE CIVILIAN PILOT

—especially in England now. But we pay the extra cost because we secure speedier communication. That is the moral to be drawn from any comparison of relative costs of travel, and if we regard things in their true perspective we shall see that aerial transport has nothing to fear on account of unfavourable cost figures so long as it possesses the twin advantages of speed and safety.

A Fokker Service to Berlin

Early in the coming spring it is proposed to inaugurate an aerial service between London and Amsterdam, with extensions to Hamburg, Copenhagen, and Berlin, fuller details of which will be found elsewhere in this issue. It is understood that this service is to see a striking innovation in the shape of the wooden-winged Fokker monoplanes which are to be built in Holland, though the power-plant will be the 240 h.p. Siddeley "Puma" engine, which made such a name for itself during the War. The new service will, by means of the interior German air lines, connect up with the principal cities of Germany, the route to Copenhagen being extended by a seaplane service to Sweden.

Naturally, we are very pleased to know that the existing air lines operating from this country are to be supplemented by so ambitious a service, but we cannot but deplore that its promoters intend to make primary use of a foreign machine. We have seen enough and heard enough of the Fokker to make us quite content without any further acquaintance with the make. It is not at all that we resent the employment of a machine which, in its day, was by way of being a hard nut for our airmen to crack, equipped as they were with machines inferior in fighting capacity, but that the whole War record of the mark is not such as commends itself to us in time of peace. More than that it is unnecessary to say, the more so as it is now understood that a number of the machines to be actually employed on the London-Amsterdam service will be British-built and flown by British and Dutch pilots.

It is understood that there is a strong possibility that the service to London will be developed inland, and that machines, after landing at Waddon for Customs examination, will resume their journey inland to the destination for which their cargo is consigned. If this is so, as we believe, the extension will be a remarkable one in the history of civil aviation in this country, since it will constitute the first serious attempt to carry out what may be described as a door-to-door conveyance of passengers and goods.

WAR AWARDS TO INVENTORS

ON Monday a White Paper was issued as the "first report" of the Royal Commission on Awards to Inventors up to July 31, 1920. The total number of claims to that date were 1,128, and the money expended upon the work of the Commission down to November 30, 1920, including the cost of printing and publishing the report, is given at the very moderate figure of £6,433 18s. After a lengthy preamble of over eight foolscap pages, a list of 84 awards is given, and amongst these quite a fair proportion are directly concerned with aviation. These include:—

Name of Claimant	Nature of Claim	Amount Awarded £
1. Mr. J. F. Buckingham	Incendiary tracer bullet	10,000
3. Lieut. R. F. Power	Aerial target	2,345
4. Maj. A. E. G. MacCallum	Aerial target	Nil.
6. Dr. E. Prassone and Major Luigi Avorio	Kite balloons	4,500
7. Messrs. Sopwith, Ltd.	Synchronising gear	3,950
8. Lieut.-Col. A. G. Shortt	Tie-off sleeve for balloons	1,000
9. Commander Brock (executrix of) (In addition to £7,000 already received from Admiralty.)	Brock bullet	5,000
15. Messrs. Robinson and Cleaver	Suits for airmen	800
19. Messrs. Marechall and Hervieu	K.B. and Hervieu sheds	22,000
20. Dr. E. Russel-Clarke (executrix of)	Improvements in wireless telegraphy and aircraft devices	8,000
22. Messrs. Smith and Sons, Ltd.	Air speed indicators	950
24. The Blackburn Aeroplane and Motor Co., Ltd.	Turnbuckles	1,200
40. Messrs. Hobson, Ltd.	Carburettors	35,031
43. Capt. W. H. Geake	Aeroplane message carrier	Nil.
45. Capt. W. O. Bentley	Improvements in engines for aeroplanes (B.R. 1 and B.R. 2)	8,000
46. Commander B. C. Walker	Torpedo control disc	500
47. Comdr. Wake Walker	Torpedo control disc	500
48. Mr. J. Wearham	Electrical height indicator for anti-aircraft gunnery	Nil.
49. Mr. H. Dickinson (An award of £100 had been made by the Admiralty.)	Incendiary bullets	Nil.
53. Flight-Lieut. W. Peer Groves	Brock bullet	500
57. Capt. Pratt	System of Training aerial observers	1,250
63. Mr. John Pomeroy (Claim abandoned at hearing).	Incendiary bullet (further claim)	—
66. Mr. C. H. Curtis	Improvements in helmets for aviators	750
68. Maj. H. E. Wimperis	Drift bomb sight	500
69. Maj. H. E. Wimperis	Course setting bomb sight	500
70. Maj. H. E. Wimperis	Porroscope or negative lens sight	Nil
71. Lieut. Comm. R. Gregory	Drift indicator	100
72. The Argo Co., Ltd., Arthur Hungerford Pollen and Halver Folkestad Landstad	Course setting bomb sight	500
73. Capt. A. G. Matthews	Air navigational instruments and bomb dropping sights	Nil.
74. Mr. E. T. Willows	Improvements to kite balloons and aprons	1,000
75. Maj.-Gen. E. B. Ashmore	Balloon apron defence	Nil.
76. Capt. Vittorio Betteloni	Balloon aprons	Nil.
77. Mr. Edgar Booth	Aerial defence	Nil.
78. Mr. J. H. C. Iggulden	Balloon apron defence	Nil.
79. Mr. Robert Lowry	Balloon aprons	Nil.
82. Messrs. Gwynnes, Ltd.	Engines for aeroplanes	110,375

"Municipal Landing Fields and Air Ports"

UNDER the above title what promises to be an interesting book, edited by George S. Wheat, is to be published by Messrs. Putnams shortly. This is due to American enterprise, and will contain chapters by the leading naval and military authorities in the States, together with a complete classified list of all landing fields in the country.

Air Mail Service for Mexico

A TRIAL flight was carried out recently between Mexico City, Puebla and Vera Cruz, a distance of 225 miles, with such success that a regular mail service will, in all probability, be started next February or March. Fernando Proal, a Mexican pilot, carried out this flight on an American machine, taking 2 hrs. 20 mins. to complete the journey.

FLIGHT

"L.64" AND "L.71"

Two of the Zeppelins Surrendered to Great Britain

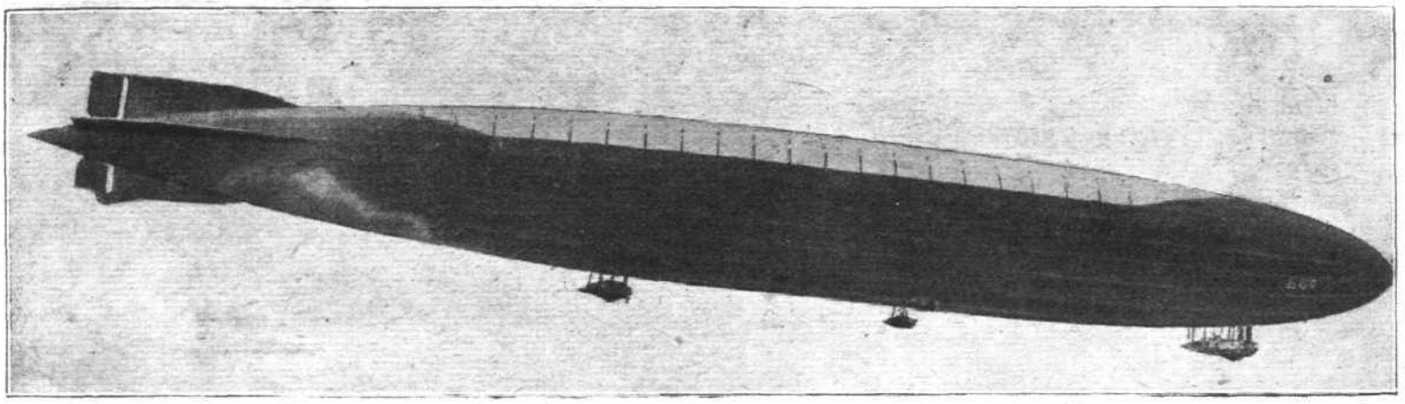
THROUGH the courtesy of the Air Ministry we were able to pay a visit to Pulham Air Station some time ago, and there inspect two of the Zeppelins surrendered by Germany to Great Britain under the Peace Treaty. Thus it is possible for us to give our readers, this week, some particulars, together with illustrations, of these two ships which we think will be of interest. The two ships in question are the "L.64" ("L.Z.110"), and the "L.71" ("L.Z.113"), both of comparatively recent construction.

"L.71," the largest and latest of the two, was the first to be delivered, arriving at Pulham in the early hours of the morning on June 30 last, with two German officers and 22 men in charge. There were also three British officers (Col. Sparling, Capt. R. Booth, and Capt. F. Durrant) on board. A very successful landing was made, and the huge ship *just* managed to get into the large shed (originally intended for "R.34") with only a matter of a couple of feet or so to spare each end.

"L.64" arrived at Pulham on July 22 last, and was in charge of the same crew which brought over the "L.71." It was placed alongside the latter, and looks "quite small" in comparison, being 100 ft. shorter.

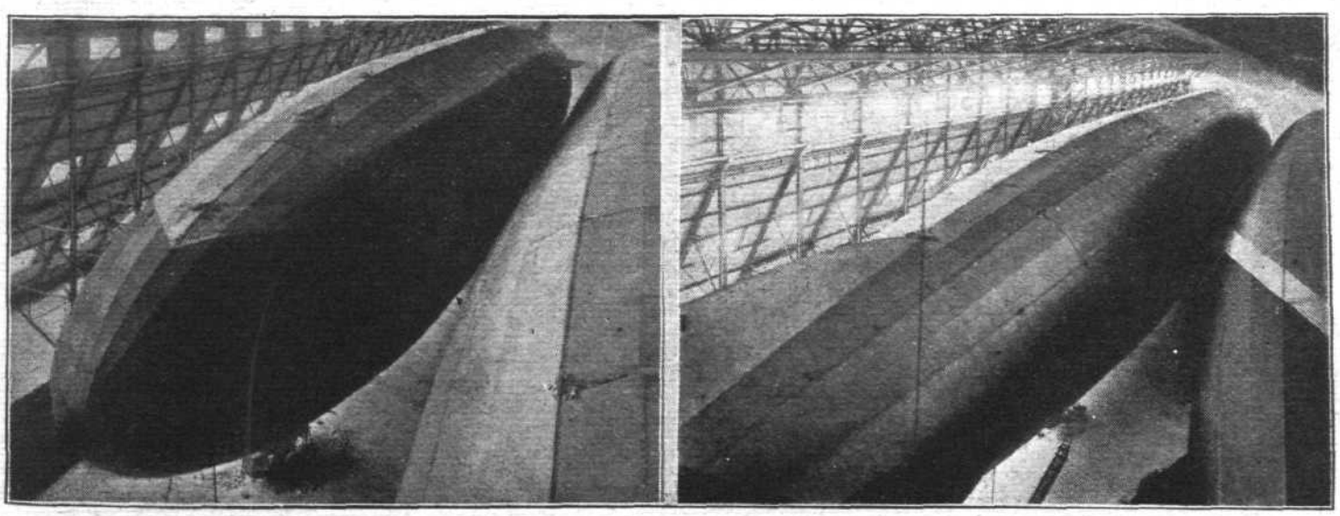
The "L.64" belongs to what was known as the height-climbing class, and was one of the last of this series to be built (1917-18). The early ships of this class, the "L.40's" (one of which, the "L.49," it may be remembered, came down, more or less intact, at Bourbonne-les-Bains on October 20, 1917, after a raid on England), were improved models of the "L.33" class, which we described in FLIGHT for October 26, 1916. The weight of these ships was reduced considerably by means of various improvements and modifications in the hull construction. The cars were also made lighter, and were of a more streamline shape—which gave an increased speed. Generally speaking, however, the construction as a whole was practically identical to that of the "L.33" class, and inasmuch as the "L.64" differs again from the 'L.40's", only in a few minor details, we would refer our readers to our previous article on "L.33" as regards the general construction of the aluminium framework, and we will confine our present remarks to a brief outline of the main characteristics of "L.64."

The "L.64" has a total length of 644 ft. and a maximum diameter of 78 ft. There are 14 gas ballonets having a combined capacity of 1,970,000 cu. ft., giving a gross displacement of about 60 tons, of which about 38 tons is gross disposal lift. The maximum speed is a little over 60 m.p.h., and at 45 m.p.h. cruising speed the range of action is about 4,000 miles. The ceiling is in the neighbourhood of 20,000 ft.

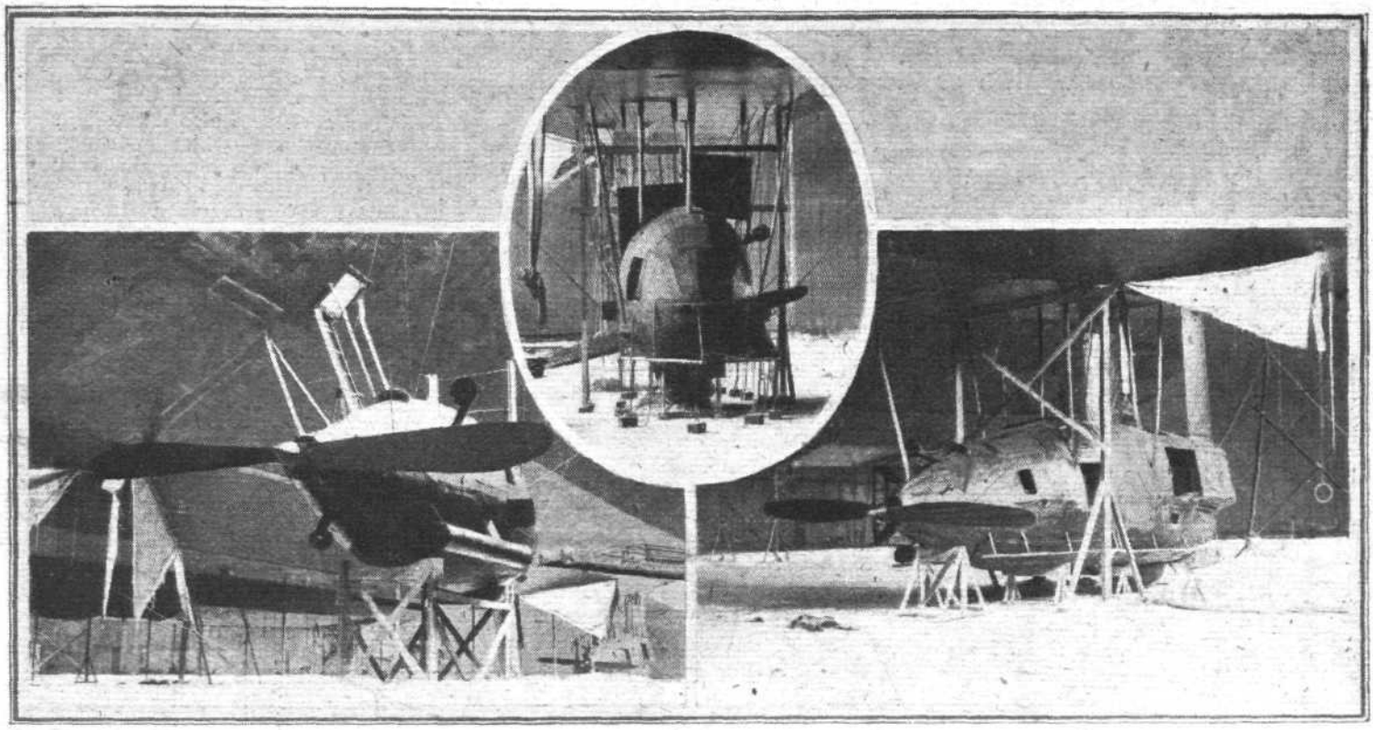


THE SURRENDERED ZEPPELINS: "L.64" in flight

The streamline form of the hull is somewhat more pronounced than that of the "30" class, the lines following, as far as we could see, a continuous curve from stem to stern—although extremely fine along the centre. In section it is a uniform polygon of 25 sides, the lower-most side being horizontal and forming the base of the internal catwalk. There are 13 main longitudinal girders, in between each of which is a smaller intermediate girder. The bottom pair of main girders are located at the catwalk, the walk or "floor" of which is formed on the intermediate girder. The main transverse frames are located between each gas compartment, and there are two smaller intermediate frames between them. These main frames, except those in the vicinity of the tail planes, have girder trussing as shown in the accom-



THE SURRENDERED ZEPPELINS: A general view (on left) of "L.64," lying alongside "L.71" in the shed at Pulham. On the right, "L.71" in the shed, which was only just long enough to receive it

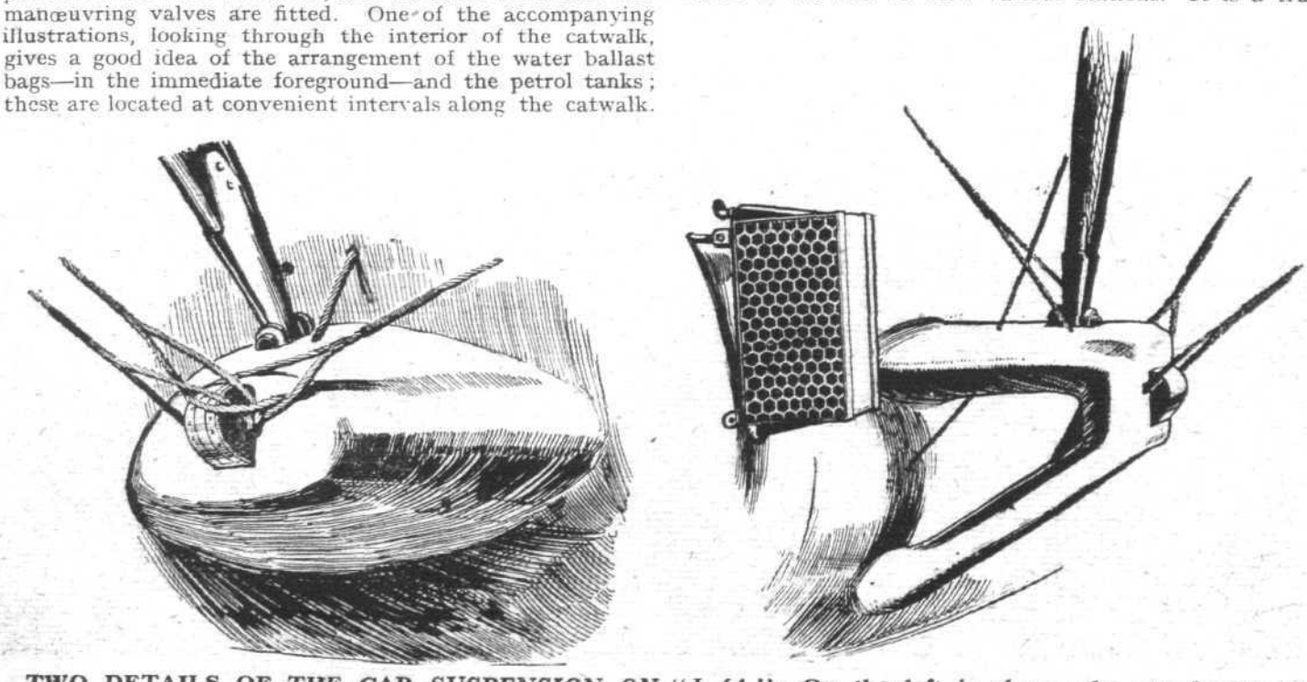


THE SURRENDERED ZEPPELINS : The front car (right), side car (left) and rear car (centre), on the "L.64"

panying internal views. All the girders, longitudinal and transverse, are of the usual triangular section and construction. The transverse wire bracing, at the main frames only, is similar to that employed on the "L.33" and on the "R.80" described and illustrated in our issue for August 26 last. The straight-through bracing wire, extending from stem to stern along the axis of the hull, is still employed. This cable is divided up into units, one for each gas bag, which are coupled together outside the latter.

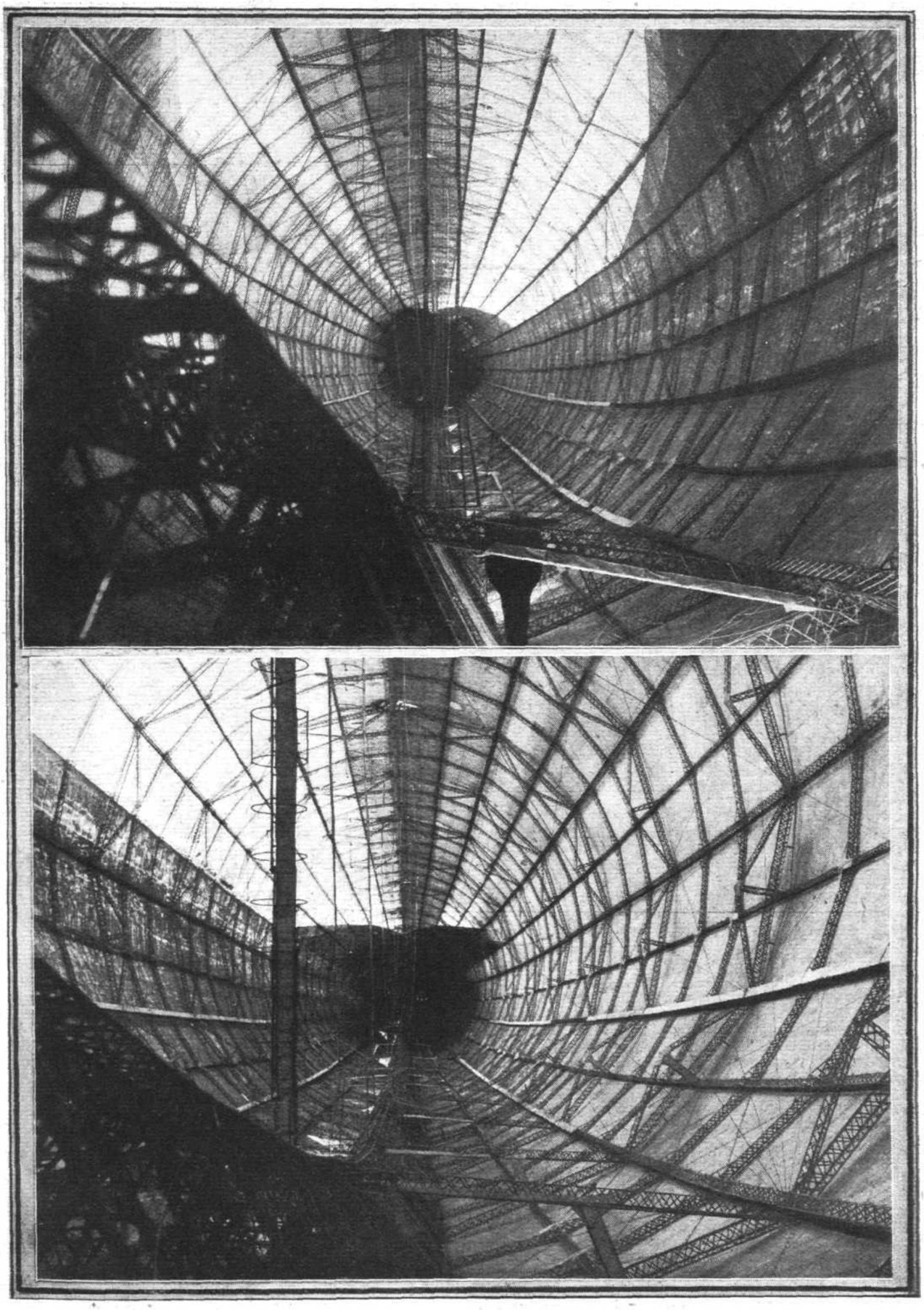
Between every pair of gas bags is a ventilating shaft passing up from the catwalk to the top of the hull, for the purpose of carrying off any free gas that may be within the hull or catwalk. A gun platform is mounted on the top of the hull between the first and second gas bags, a ladder being provided in the shaft at this point giving access to the platform. The gasbags themselves call for no special comment, a cord network on the inside of the hull framework protects them from the latter, and the usual automatic and manœuvring valves are fitted. One of the accompanying illustrations, looking through the interior of the catwalk, gives a good idea of the arrangement of the water ballast bags—in the immediate foreground—and the petrol tanks; these are located at convenient intervals along the catwalk.

The "L.64" has four cars, or gondolas, all of good streamline shape. The forward, and largest, car is divided into two entirely separate compartments, the front one forming the main control cabin, and the rear one the engine room. The control cabin, which is quite roomy, is provided with large glass and "celluloid" windows extending round the front and sides. Right forward is the control wheel operating the rudders, and on the port side is the elevator control wheel. Immediately above the latter is a rack carrying the levers operating the various water ballast bags. On the starboard side are the engine control telegraphs to each engine car. Various other controls, and navigating instruments, etc., are also arranged in this quarter of the car, where a good-sized table is provided for the laying out of maps, etc. All the various control cables are led up from the car to the hull through large streamlined shafts formed on the two front suspension struts. The cables then pass along through the inside of the hull to their various stations. It is a truly

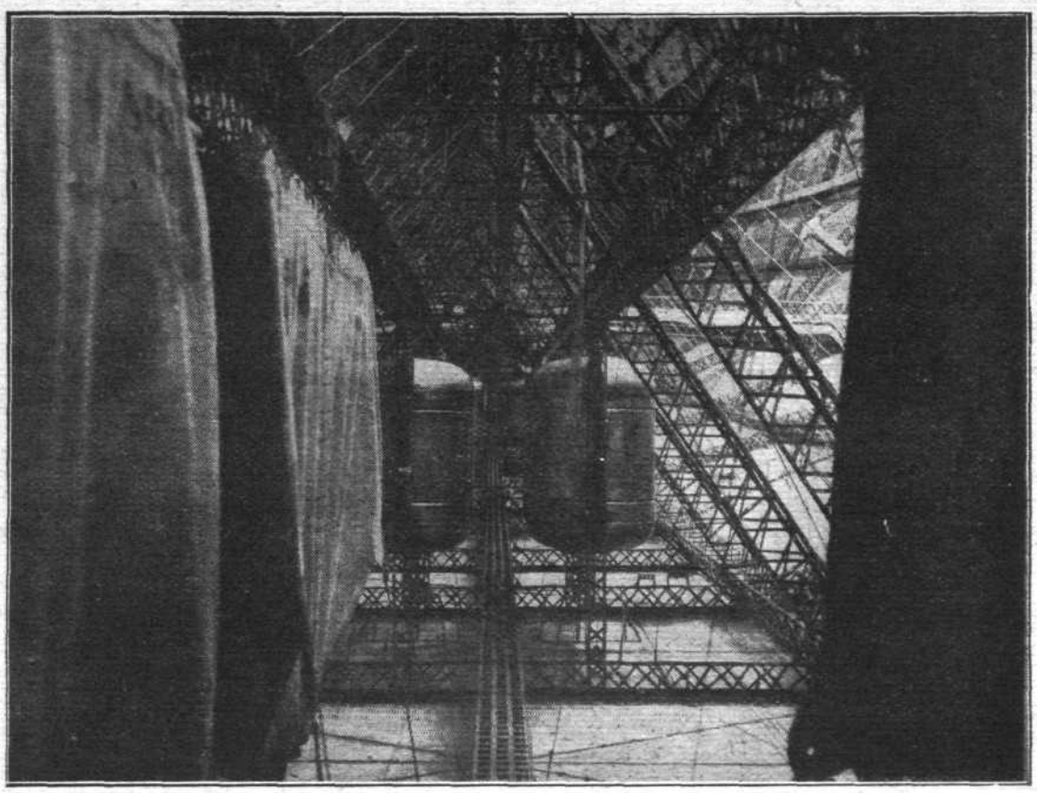


TWO DETAILS OF THE CAR SUSPENSION ON "L.64": On the left is shown the attachment of the suspension cables and streamline struts forward of the stern car, and the same, on the right, at the rear of the car. In this latter view the oil radiator is also shown.

FLIGHT
AIRCRAFT ENGINEER



THE SURRENDERED ZEPPELINS: Two views looking within the hull of "L.64." At the top looking forward, and below looking aft. Note the ventilating shafts leading up to the top of the hull. The keel or cat-walk may be seen at the bottom of each view



The Surrendered Zeppelins: A view taken inside the catwalk of "L.64" showing, in the foreground, the water ballast bags, and the petrol tanks

remarkable sight to see the maze of cables emerging into the hull from each shaft, and to try and "follow them up" seems next to impossible.

In the rear portion of the control cabin is the wireless room. This consists of a thickly padded "cell" suspended within the cabin so as to be practically isolated from the rest of the car. The wireless section is very thoroughly insulated from the rest of the ship.

As previously stated, the engine compartment of the front car is built up quite separately from the control cabin, although it is joined up with the latter. The radiator is mounted forward on the top of the engine compartment, and is capable of sliding up and down in its frame into or out of the car, thus varying the cooling surface exposed. The construction of the whole car is, except that it is of streamline shape, practically the same as that employed on the "L.33," channel and L-section strips with channel and w-braces mainly being employed. Most of the car is fabric covered, sheet aluminium and 3-ply being used in one or two places.

The central side cars, with an engine in each are mounted fairly close up to the hull, and are of a very clean streamline shape, the only external projections being the sliding radiator, oil radiator, exhaust pipe and ventilating funnels. Small windows are provided in the sides. The main framework of the car, which carries the engine, etc., forms the lower half, whilst the upper half is of lighter construction. The covering is fabric for the top half and sheet aluminium for the lower.

The rear car is an enlarged edition of the foregoing, and contains two engines arranged one in front of the other and slightly off-set, each driving the single propeller through a clutch-gear-box. Each engine has its own sliding radiator. All four engines are 260 h.p. Maybachs, driving propellers at the rear of the cars. Both forward and rear cars are fitted with bumping and floatation bags. Communication with the hull catwalk, and therefore between all cars, is obtained by means of ladders leading from the cars through trap-doors in the bottom of the hull. These ladders are ingeniously arranged so as to fold up when not in use, so that when so closed they form plain streamlined struts. Two of these ladders, one on the rear car of "L.64" and one on a side car of "L.71" are shown in our illustrations, and need no further explanation.

(To be Concluded)

The Pescara Helicopter.

EVIDENTLY M. Damblanc is not to be the only inventor to develop the helicopter type of machine. From France comes a report of another designer, M. Pateras Pescara, having finished a machine of this type. In the Pescara helicopter there are two concentric lifting screws, mounted one above the other and turning in opposite directions. Each screw has six biplane blades, constructed very much like an ordinary biplane with struts and wire bracing. The feature claimed by the designer for this machine is ability to land slowly with engine stopped. Apparently the screws are tilted to give them a good gliding angle when revolving freely, and then, just before coming to the ground the angle is increased to that of maximum lift, the momentum of the screws overcoming the resistance at the larger angle, much after the fashion of an aeroplane which has glided down at a fairly high speed and is then carried along by its momentum for a considerable distance before beginning to drop.

M. Pescara has had a checkered career, and has, according to the French reports, had many difficulties not connected with flying. He has, however, succeeded in interesting the *Section Technique*, and next week he is to demonstrate the machine before a French Commission at Barcelona, where the machine has been built. Whether he will then succeed in proving his theories correct remains to be seen. If he does we understand that the French Government is under agreement to finance further development of the machine.

Again, it appears that M. Pescara is not the only one ready to try his helicopter, for also from France comes another report, on January 24, of a nocturnal "flight" made by a very "secret" helicopter. No name is mentioned, but it may possibly be our old friend Damblanc who rose into the air during the night. In the first test, the report says, the machine was lightened by a small balloon which lifted a fair proportion of the weight of the machine, thus wisely reducing the risk of a crash in case of engine failure. Later the balloon was removed, and the machine is said to have risen to a height of several meters. In coming down the pilot cut off the ignition too soon, and the machine came down somewhat heavily without, however, sustaining any damage.

"Hazell" 1921

"HAZELL'S ANNUAL AND ALMANACK," now a household word, for 1921 is to hand. It is as usual a remarkable compilation of facts and figures to which daily reference is almost a necessity. If there is a fault at all, it is that there is so much for the money, 7*s.* 6*d.*, charged, necessitating the use of very small type. But as this is beautifully sharp and clear little cause for complaint can exist even upon this count. Aviation claims 11 headings in the Index, the aeronautical section being in the able hands of Major Turner. Whether the information sought is political, social or popular, there is hardly a subject left undealt with. It is an amazing publication, and would be cheap were the price fixed at a much higher figure than that asked.

NOTICES TO AIRMEN

Donibristle Aerodrome—Obstructions

WITH reference to Notices to Airmen No. 49 of 1920 and No. 2 of 1921, pilots are also warned that a row of poles 18 feet high, carrying electric light cables, has been erected at Donibristle aerodrome, Fife (56° 2′ 0″ N., 3° 21′ 0″ W.), on the south side of the main road leading from the technical buildings to the camp buildings. (No. 4, 1921.)

A New Landing-Ground

NOTICE to Airmen No. 5 announces that a ground at Harras, Dyke Whitehaven, should be added to the list of Civil aerodromes licensed as suitable for Avro 504K and similar machines. The ground is one mile W.S.W. of Whitehaven.

The same notice also announces that the ground at Billesley should be deleted from the list.

France : Use of Military Aerodromes

NOTICE to Airmen No. 98 of September 24, 1920, is amended with respect to the use of the military stations specified on page 4. The following paragraphs are added :—

These stations should be used in emergency only, *i.e.*, when pilots are unable to reach a civil aerodrome.

Assistance can only be given by the French military authorities in exceptional circumstances, and in all cases only so far as the personnel and material available permit. (No. 6, 1921.)

Government Aerodromes : Prices of Aviation Spirit

THE prices of aviation spirit given in Notice to Airmen No. 114 of 1920 are amended from January 1, 1921, as follows :—Aviation spirit, per gallon, 3*s.* 9½*d.*; motor spirit (Grade 1), 3*s.* 5½*d.*; motor spirit (Grade 3), 3*s.* 3½*d.*; benzole, 3*s.* 8*d.*

Prices in Scotland and Ireland, 1*d.* more in each case. (No. 7, 1921.)

R.A.F. Aerodromes : Standardisation of Obstruction Lights

1. THE following standard method of arranging obstruction light at Royal Air Force Stations where night flying is being, or will be, carried out, has been adopted :—

(i) *Land Stations.*—(*a*) Two red lights 6 feet apart on the last obstacle on the gliding-in side, at right angles to the prolongation of the long arm of the landing flares. (*b*) One red light on the first obstacle on the exit side of the flares.

(ii) *Seaplane Stations.*—Two red lights 6 feet apart on the shed or other obstacle nearest the alighting area, the lights to be placed on the highest part of the obstacle.

2. For the present hurricane lamps will be used for these obstruction lights when required. (No. 8, 1921.)

France : Aerodromes and Meteorological Stations

NOTICE to Airmen No. 98 of September 24, 1920, is amplified as follows :—

1. *Aerodromes*

ST. INGLEVERT. The road forming the eastern boundary of the aerodrome is marked by a line of small stakes one metre high, at intervals of 25 metres, each stake being surmounted by a vertical white disc of 50 cms. diameter.

2. *Airship Stations*

MAUBEUGE. A warning has been issued to French aviators that the surface of this station, being intersected by shallow trenches and ridges, is very dangerous for heavier-than-air craft. It should not therefore be used even for emergency purposes, its appearance from the air being very deceptive.

Note. Maubeuge is a military station, and is not included in the list of aerodromes at which permission has been granted to British civil pilots to land.

3. *Meteorological Stations*

MONTÉLIMAR (ANÇONE). A telephone (Montélimar 1-88) has been installed.

The following stations were opened on November 1, 1920 :—Merignac (near Bordeaux) (district station), Bayonne (principal station), Toulouse (principal station), Ajaccio (principal station), Perpignan (secondary station).

4. *Authority*

Bulletin de la Navigation Aerienne No. 9—December, 1920 (for Paras. 1 and 2).

Bulletin de la Navigation Aerienne No. 8—November, 1920 (for Para. 3). (No. 9 of 1921.)

Manchester (Didsbury) Aerodrome : Reduction of Landing Area

PILOTS are warned that a road running from S.S.W. to N.N.E. across Manchester Aerodrome (Lat. 53° 26′ 0″ N., Long. 2° 15′ 0″ W.) is in process of construction. Aircraft should therefore land on that portion of the aerodrome which lies to the north-west of the road and which is approximately 550 yds. by 550 yds. in dimensions. The remainder of the aerodrome is being relinquished. (No. 10 of 1921.)

Penshurst Landing Ground : Telephone

1. Telephone Installation : There is no longer a telephone on this landing ground. The nearest telephone is now at Chiddingstone Causeway Post Office, about ¼ mile from the landing ground.

2. Cancellation : Notice to Airmen No. 9 of January 29, 1920, is hereby cancelled. (No. 11 of 1921.)

THE ROYAL AIR FORCE MEMORIAL FUND

AT a meeting of the Executive Committee held at 7, Iddesleigh House, Caxton Street, on January 21—Lord Hugh Cecil in the Chair—grants amounting to £919 6*s.* 2*d.* made by the Fund during the past few months were approved. Grants amounting to £173 17*s.* 11*d.* made since the last Meeting on December 16 were approved. A list of donations and subscriptions received since last Meeting, amounting to £629 12*s.* 1*d.* was submitted.

A resolution embodying a scheme for granting aid to the post-War Royal Air Force was adopted, and A.V.M. A. V. Vyvyan has been asked to accept the chairmanship of the sub-committee appointed to deal with this matter, and the members will consist practically of serving officers and other ranks of the Royal Air Force.

Regarding the R.A.F. Memorial, a letter was read from the first Commissioner of H.M. Works, suggesting three sites for the Memorial. The one which received the most favourable consideration is at Whitehall Stairs, on the Thames Embankment, midway between Westminster Bridge and Hungerford Railway and Footbridge. At the next Meeting, a full discussion on the whole subject will take place.

The scheme for the establishment of a Boys' Home at Vanbrugh Castle, May's Hill, Blackheath, is, it was noted, proceeding apace, and the question of a Charter being applied for was considered.

Amount of donations and subscriptions announced up to December 15, 1920, £102,747 10*s.* 10*d*; amount since received up to January 20, £629 12*s.* 1*d.*; total, £103,377 2*s.* 11*d.*

Monaco Seaplane Meeting.

AT the Monaco Meeting, April 13 to 20, an ambitious preliminary programme of events is announced, and it is to be hoped that these will prove more practical and instructive than those which were held during last year. April 15-16 will be devoted to a 492-kilometre test, Monaco-Ajaccio-Monaco, in which each competitor will carry a dummy mail post for Ajaccio, where he will again take on another dummy post for return to Monaco, the control providing for a maximum time out and home of twelve consecutive hours. Prior to the race preparatory tests must be made, consisting of a 2,000 metre climb, with 200 kilos. of ballast, within 45 mins.

April 19 there will be a shorter race—Monaco-Cannes-San Remo-Monaco, twice, a distance of 284 kilometres. For this speed seaplanes and commercial machines each have a category to themselves, the latter competing in the morning and the racers in the afternoon. The Eliminatory test for this consists of a 3,000-metre climb in one hour, and the competitors will have to take off from the water.

April 17-20 a speed race, Monaco-Cannes-Monaco-Mentone-Monaco, about 125 kilometres ; start from the water. During the whole meeting in the morning between 11 and 12 speed races will be the order of the day over the mile and for climbing, whilst other contests are provided for in connection with skilful alighting, etc. The prize fund amounts to 160,000 francs in money. (Equivalent to about £3,000 at the present rate of exchange.)

"THE LOG OF H.M.A. 'R.34': JOURNEY TO AMERICA AND BACK"

By Air-Commodore E. M. MAITLAND, C.M.G., D.S.O., A.F.C., R.A.F.

(Hodder and Stoughton, Ltd., 10*s*. 6*d*. net.)

In opening this book—and before commencing to read it, for once started there is no putting it down until the last page has been read—one's first thought is one of wonder and regret at the delay in publishing. It is now nearly eighteen months since that memorable double crossing of the Atlantic by air. Yet, when thinking matters over, one begins to doubt whether the moment has not, after all, been well chosen. The event is far enough removed to enable it to be looked at as a piece of aviation history, yet not so far back as to be outside the light of the present day, while opening one's eyes to the possibilities of tomorrow. If there is any abatement in the public interest in aircraft, this book will go a very long way towards reviving it, especially as it appears just at a time when prolonged experimental airship cruises are contemplated. On balance, therefore, the appearance of the log of "R.34" has probably been very well timed, and may consequently confidently be expected to have the success which it so thoroughly merits.

In his introduction General Maitland points out that the easiest course to follow in writing an account of this wonderful journey would have been the adoption of the conventional narrative form, but that would have meant losing the essence and spirit of the journey. He has instead confined himself to giving the log of the voyage exactly as it was written at the time, each event, down to the smallest, serious as well as humorous, recorded at the actual time of happening. That the author has chosen wisely no one can doubt for a moment after having read the book. In no other manner could the account so have carried away the reader by its terse expressiveness, nor have conveyed the sense of reality which, in spite of the unusual subject, stamps the book throughout.

In perusing page after page of the log of this wonderful voyage one is constantly reminded of Capt. Scott's book relating the experience of that unfortunate explorer and his companions on their dash to the South Pole. This similarity is not so paradoxical as might at first be imagined. In spite of the dissimilarity of the conditions of the two voyages, in both cases were men attempting something which had never been done before. The air travellers, it is true, knew what lay at the end of their journey, but not the conditions to be met before arriving there. Again, in the style of writing the two accounts there is the same virile touch which always has a strong appeal to the "stay-at-homes" who are, from choice or necessity, obliged to do their adventurous travels in an armchair by the fire. It might have been thought that this book would be reminiscent of Rudyard Kipling or Jules Verne, and although it is, in so far as the similarity of subject is concerned, in spirit it has much more in common with Capt. Scott's book of the South Pole journey. Whereas the works of the two authors mentioned are fascinating in the extreme, they are but imaginings, while the log of the "R.34" and that of Capt. Scott are real—terribly real in the case of the latter.

We shall resist the temptation to quote extensively from the log, and confine ourselves to some of the points vividly brought out by the narrative. Apart from the assistance which wireless can afford in checking position—and great as it is this assistance will not be fully realised until directional wireless becomes much more general—there would now appear to be a good many ways in which independent checks can be provided. The use of a cloud horizon, although not, perhaps, very accurate, is constantly mentioned. In fact, it would appear that more observations were made to a cloud horizon than to a sea horizon. The question of drift, and consequently course made good, also appears to be within sight of solution, quite a number of different methods being available for the purpose of checking it.

The importance of quick and reliable meteorological reports is also clearly brought out, and it was agreed by all the officers of "R.34" that a good method of getting information at small cost would be to equip all cable repair-ships with a meteorological observer and a suitable outfit of kites and instruments. A further interesting point is brought out by the experiment of "R.34": the great use which can be made of depressions in the Atlantic. In the Northern Hemisphere winds inside a depression blow anti-clockwise. Consequently on the north side of a depression there should be an easterly wind, while on the south side one might expect westerly winds. This fact was made use of by the captain of "R.34," Major Scott, for the first time in history, as far as we are aware. In the future such use of depressions, and of trade winds, may shorten the time of a voyage very considerably, but to make full use of them a good meteorological service will be required.

For the passengers of air liners of the future, it will be of interest to learn that although the "R.34" was several times caught in severe storms, and on occasion "bumped" so much that one of the crew only saved himself from sliding through the drogue hatch by hooking his foot over a girder, none of the occupants felt the slightest sign of seasickness. General Maitland mentions the craving for a smoke experienced during the journey, expecially after meals, and points out that passenger airships will have smoking saloons as well as ample sleeping accommodation, with electric heating throughout.

The anxiety of all on board when the petrol began to run short is hinted at rather than described, and the relief when, toward the end, a following wind helped the airship to reach Mineola under her own power can easily be imagined. Owing to the adverse weather conditions the outward voyage took 108 hours 12 minutes. The homeward trip was made in 75 hours 3 minutes, or three days three hours and three minutes.

The book is very well illustrated by photographs taken by Major Pritchard, who, by the way, was the first to land on American soil, he having jumped out in a parachute in order to give instructions to the landing party. At the end of the book there is a very interesting chart showing the two flights of the airship and some of the notable wireless achievements on this voyage. In six appendices are given respectively the names of the crew, the watch and station bill, a list of the food supplies, navigational instruments and books used on the voyage, wireless results and log, and lastly a brief explanatory note on the causes and remedies of "superheating." The log is prefaced by a letter from Mr. Rudyard Kipling. Altogether the book is one which should be read by all interested, directly and indirectly, in airships and in the future possibilities of airship travel.

ROYAL AERONAUTICAL SOCIETY NOTICES

Lectures.—Members are reminded that invitation cards for lectures are no longer circulated to Members; the only notification of lectures or special arrangements being, save in exceptional cases, contained in the weekly notices in the Press and notices in the Journal.

The lecture arrangements for the remainder of the present Session are as follows:—

February 3: Major G. Dobson, "The Use of Meteorology to Aviation and Vice Versa." Wing Commander H. W. S. Outram, A.F.R.Ae.S., "Ground Engineering." Chairman: G. C. Simpson, Esq., C.B.E., D.Sc., F.R.S., Director of the Meteorological Office.

February 17: F. Handley Page, Fellow, "The Handley Page Wing."

March 3: J. W. W. Dyer, "Airship Fabrics." Major T. Orde-Lees, A.F.C., "Parachutes." Chairman: Air-Commodore E. M. Maitland, C.M.G., D.S.O., A.F.C.

March 17: Capt. D. Nicholson, Associate Fellow, "Flying Boat Construction."

Technical Terms Committee.—It has been arranged with the British Engineering Standards Association that the revision of the "Glossary of Aeronautical Terms" published by the Society in 1919 shall be continued under the auspices of the Association. The Technical Terms Committee of the Society, which also acted as Aircraft Sub-Committee No. 1 (Nomenclature) of the B.E.S.A., has been placed at the disposal of the Association for this purpose.

Library.—The following book has been received and placed in the Society's Library: "Clouds," by George A. Clarke, F.R.P.S., F.R.Met. Soc.

W. LOCKWOOD MARSH,
Secretary.

FLIGHT

A COMPARISON OF THE COST OF TRANSPORT AND TON-MILES BY LAND, SEA AND AIR*

BY LORD MONTAGU OF BEAULIEU

IN his introduction Lord Montagu pointed out that for comparative purposes the cost of ton-miles for various methods of transport formed a useful, although not the only, basis. The factor of speed must also be taken into account. He pointed out that air transport, like other means of transport, cannot survive eventually unless it earns sufficient revenue to pay for the cost of operation plus a reasonable interest on the capital involved. Speed, the lecturer pointed out, is a comparative and not an exact term. The route from England to India direct by airship is about 3,600 miles, and at an average speed of 50 m.p.h. this journey would take about seventy-two hours, or three days, while the fastest journey by train and ship takes fifteen to sixteen days. Thus about twelve days could be saved on this journey, and this saving in time would be of great value to certain passengers. The firm which provides fast aerial transport is not only selling the right of the individual to be transported from A to B, but is also selling a certain saving of time in comparison with the next most rapid means of conveyance. This is the real reason why high speed is commercially valuable.

Having indicated the importance of the factor of speed, Lord Montagu turned his attention to the cost of ton-miles by land transport. He pointed out that in nearly all forms of land transport the cost of labour is now such a large proportion of the total cost of operation that those methods of transport which employ the least labour are those which now and in the future are likely to be the most popular and the cheapest. As regards road transport the cost of labour per ton-mile is high. In the case of air transport there is no permanent way to keep in order. For a 3 to 3½-ton lorry Lord Montagu arrives at a figure of 8*d*. per ton-mile, and for a smaller van of about 30 cwt. at a cost of about 1*s*. per ton-mile. The electric 3-ton lorry works out at about 4*d*. per ton-mile. For motor-'bus and char-à-banc the cost works out at about 1¼*d*. per passenger mile. In the case of railways a cost of 1.6*d*. was a fair average until about a year ago. This figure does not include recent rises in costs or labour, nor the cost of collection and delivery. Probably a fair figure for present conditions, and taking into consideration everything, the cost from station to station would be about 2½*d*. per ton-mile.

Transport by sea is naturally the cheapest of all forms. As in the case of air transport, there is no permanent way to keep up. "I have," Lord Montagu said, "obtained a few typical figures of voyages from London to the East, returning to London. But as the cost per ton-mile by sea is such a small fraction of a penny, the following costs are shown per 100 ton-miles, calculated on the gross weight of the steamer and its contents":—

Route.	Cost per 100 ton-miles. Fuel.	Other items.	Total.
	d.	*d.*	*d.*
London-Australia (*via* Canal)—			
16-knot mail steamers ..	3.3	3.3	6.6
14-knot intermediates ..	2.4	2.7	5.1
London-Australia (*via* Cape)—			
Cargo liners	1.6	2.2	3.8
London-Bombay (*via* Canal)—			
16-knot mail steamers ..	3.8	3.4	7.2
London-Calcutta (*via* Canal)—			
14-knot intermediates ..	1.4	3.6	5.0
London-Japan (*via* Canal)—			
12- to 14-knot intermediates	2.9	2.9	5.8

The estimated cost, on the other hand, of conveying saloon passengers per ship mile, exclusive of food, but assuming that the whole accommodation for passengers is occupied through the entire journey, is given below:—

Routes (*via* Canal)—	*d.*
London-Australia, mail steamers	1.44
,, intermediate type ..	1.11
London-Bombay, mail steamers	1.80
London-Calcutta, intermediate type ..	1.20
London-Japan, intermediate type	1.42

At 1½*d*. average per passenger per mile and allowing fifteen passengers to the ton, then the cost of ton passenger miles is about 22½*d*. a mile, about the same figure as a motor-'bus or char-à-banc.

* Extracts from Paper read before the Royal Aeronautical Society on January 20, 1921.

Rough Estimated Cost of Carrying Cargo per 100 Ton-Miles Exclusive of Loading and Discharging Expenses

	d.
London-Australia, mail steamers	10.1
,, intermediate type ..	8.2
,, cargo liner (*via* Cape) ..	6.7
London-Bombay, mail steamers type ..	12.0
London-Calcutta, intermediate type ..	9.7
London-Japan, intermediate type	9.8

"It should be noticed that in these statistics no allowance has been made for interest on capital. Also that a port, like a railway-station, is seldom more than a point of distribution and collection, and that 'origin to destination' should be the ultimate aim and motto of all transport."

As regards the cost of conveyance by aircraft, Lord Montagu referred to the figure of 28*d*. per *aeroplane mile* given by Mr. White-Smith at the Air Conference. This figure was now thought to be too low, and he personally thought that about 44*d*. per *ton-mile* would be a fair figure if a reasonable profit was to be included. "At this figure the aeroplane can only compete successfully with existing transport because of its speed." With regard to airships Lord Montagu gave the following figures for the concrete case of a flight from England to Cairo and India, allowing fifty hours for the journey to Cairo and fifty hours on—

	s.	*d.*	
Interest on capital expenditure ..	7	0	per mile over land or sea.
Cost of operating the airships ..	23	5	
Cost of running the bases ..	11	0	
	41	5	

Or an "all-in" cost of 497*d*. per mile made good over the ground. If the airship could carry, as a conservative figure, 15 tons of commercial load for a journey occupying 50 hours, this would make the "all-in" cost per ton-mile 35½*d*. for such a journey. Not a formidable figure in comparison with other methods of fast transport.

Allowing seven passengers to the ton, which for practical purposes amounts to each passenger being allowed 1 cwt. of luggage free, and 1 ton of mails at 6*d*. per oz. for each stage of fifty hours, the following table is of interest:—

England to	Airship. Approximate Time of Transit	Mails (1 ton) carried).	Passengers.	Steamer. Approximate 1st Class Steamer Passenger Fare.†
	days.	oz.	£	£
Egypt	2¼	6*d*.	50	45 to 50
India	5	1*s*.	100	65 to 70
South Africa ..	6½	1*s*. 3*d*.	120	70
Australia ..	10½	2*s*.	190	115 to 128

The above figures are based on airships actually under construction ("R. 38" class), showing a profit of 15 per cent., and are based on the carriage of 75 per cent. of the possible passengers.

The passenger ton-mileage in this case would work out at about 34*d*., but no doubt these costs will be reduced later on. And while the cost is in this case moderate, there would be a great saving in time on a non-stop run for at least 2,500 miles—say London to Egypt, or 3,800 miles London to India.

TABLE I.—*Comparative Average Speeds by Land, Sea and Air.*

	Miles per hour. Average speed.
Land.	
Express and fast trains	40
Ordinary passenger train	25
Ordinary goods train	14
Motor-car or cycle	20
Motor-'bus or char-à-banc	15
Motor-lorry	13
Sea.	
Mail ship	16
Ordinary passenger ship	12
Ordinary cargo ship	10
Air.	
Aeroplanes for mails and passengers ..	100
Aeroplanes for goods	80
Airship for mails and passengers ..	60
Airship for goods	50

† Now increased about 20 per cent. beyond these figures.

TABLE II.—*Cost of Ton-Miles by Land, Sea and Air.*

	d.	
Land.		
From station to station—		
Per train—Passengers, 15 to ton at 3rd class far of 2*d.* a mile	30	B
Goods, average (1919)	1·6	B
From origin to destination—		
Per motor-lorry—goods in not less than 3-ton lots ..	10	B
Per 'bus or char-à-banc—15 passengers to ton	22½	B
Per average motor-car	8	A
Per motor-cycle	2	A
Sea.		
From port to port—		
Mail ship	·066 to ·072	A*
Passenger ship (intermediate) ..	·050 to ·058	A*
Cargo liners	·038	A*
Air.		
From aerodrome to aerodrome—		
Aeroplanes for mails and passengers, D.H.18	30	A
Aeroplanes for goods, D.H.18 (special type)	14	A†
Airships for mails and passengers, say 10 tons in all ..	36	B
Airships for goods (R.38) ..	35½	B‡
Aeroplane, 2-engine Vimy type	126 per machine mile	B

A Weight of vehicle included.
B Weight of vehicle not included.

* Calculated on gross weight of steamer and contents.
† Estimated.
‡ Excluding insurance.

TABLE III.—*Transport in Order of Speed.*

	Average speed in m.p.h.
1. Aeroplane for mails and passengers ..	100
2. ,, goods	80
3. Airships for mails and passengers ..	60
4. ,, goods	50
5. Express and fast trains	40
6. Ordinary passenger trains	25
7. Motor-cars and motor-cycles	20§
8. Mail or fast passenger ship	16
9. Motor-'bus or char-à-banc	15§
10. Average goods train	14
11. Motor-lorry for goods	13§
12. Ordinary passenger ship	12
13. Ordinary cargo ship	10

"Finally, I may be excused for asking whether the world in general realises the great political as well as economic importance of transport. Lack of roads was and is the sign of a low form of civilisation. It was the most potent cause of the success of the Red Revolution in Russia. It is the chief cause of scarcity and famine in the towns and of isolation in the country districts in Russia today. The Government of a country cannot govern or carry on effective administration without passable roads along which troops, people, posts, supplies, and news travel. The greater the transport facilities the easier can social difficulties be ameliorated and overcome. All kinds of transport are necessary for the increasing commerce of the world, and air transport will have to bear its share before long in conveying its special kinds of freight."

§ The road motor-vehicle is the only vehicle which can collect and deliver without intermediate handling between origin and destination. These figures show that while the cost of ton-miles may in some kinds of transport and for some kinds of freight be a criterion of some value, it is not the only basis of comparison.

Recruits for the R.A.F.

LAST week a contingent of 300 boys left King's Cross Station by train for Sleaford, Lincolnshire, where they will undergo their military and technical training. Most of these were promising youngsters, every one of them with the utmost keenness of youth. Many of them were seen off by their parents, and in many cases envious younger brothers. The spirit of the whole crowd was something to be wondered at in these days of general long faces, and promises well for the solid establishment of such a fascinating object in life as the Royal Air Force. It is the opening up of human virgin soil in this way that will make for a natural inclination towards riding the air, with future generations. An officer and several sergeants of the R.A.F. were in conduct of the party, and appeared to be on the very best of terms with their charges. The variety of class of boy was very striking, many of them having quite an imposing kit, whilst not the least pleased with the whole proceedings were those whose belongings were kept within bounds in brown paper parcels. A very happy photograph appears on this page of the "taking off" for the first stage in an R.A.F. recruit's career.

An Instructive Object Lesson

ON Monday morning a small passenger aeroplane belonging to the Handley Page Transport (Limited) left Cricklewood Aerodrome for Birmingham at eleven o'clock. Piloted by Lieut. G. P. Olley it carried one passenger, and landed at Castle Bromwich Aerodrome, north of Birmingham, at 12.20.

After a halt for luncheon the return flight commenced at 1.5 p.m. The machine then carried two passengers and the pilot, and landed at Cricklewood at 1.50, having only taken three-quarters of an hour on the return journey, this working out at a speed of about 150 miles an hour.

A Speed Record Noted

THE Commission Sportive of the Aero Club of France has officially recorded as a kilometre speed record Sadi Lecointe's flight at 313.043 kiloms. per hour.



BOUND FOR CRANWELL : A gathering of new recruits for the R.A.F. at King's Cross Station on January 18, ready to entrain for Cranwell. Three hundred of these spirited youths made up the party. The keen and joyous spirit of the whole contingent, and the spontaneous acknowledgment to "Flight's" photographer for his attendance, gave high promise for their future in the R.A.F.

AIRCRAFT IN THE EAST

A VERY interesting paper was read before the Central Asian Society on January 20 by Capt. P. D. Acland of Vickers, Ltd. Capt. Acland headed his paper "Communications in the East—their expansion by means of aircraft," and the paper was illustrated by a series of excellent lantern slides, several of which have not, so far as we are aware, been shown before. Capt. Acland drew attention to the vast importance of personality in vital affairs of State, business, or war, and pointed out how the written message is only a subterfuge. Before long, the lecturer said, we shall be able to say to America, "We shall be with you tomorrow," to India and South Africa, "the day after tomorrow," and to Australia "in five days." The uttermost ends of the earth will be as near to us then as Egypt is today.

Capt. Acland then gave an outline of the progress made up to the present time, and dealt with the conversion of war-type machines into commercial aircraft, showing as an example the famous Vickers Vimy-Commercial adapted from the Vimy bomber. After giving statistics of the amount of commercial flying done in this country during the period May, 1919, to September, 1920; Capt. Acland called attention to what has been and is being done in Germany, and mentioned as a significant indication of how seriously the late enemy takes commercial aviation that the trading aerial transport companies have associated themselves with the Hamburg-Amerika line and with the Norddeutsche Lloyd. He also referred to the matter of subsidies and congratulated Sir Frederick Sykes on having at last succeeded in obtaining one for aviation.

With regard to the aerial routes to the East, the lecturer mentioned Cairo as of very great importance to aviation in general and to this country in particular. The London-Cairo route is not, he said, "all-red" as we see it, but Cairo is nevertheless a very convenient first stop for an airship radiating from our capital in an easterly direction. The full complement of aircraft for an Empire aerial organisation would include the airship, aeroplane, amphibian, and, perhaps, the flying-boat, each to be used in its own sphere. The part to be played by heavier-than-air craft is to link up points not touched by the airship and to operate the shorter distances from the airship stopping places.

Capt. Acland mentioned that the present unsettled conditions in the near East have retarded progress considerably, but even so wireless stations have been opened every 300 miles or so between Cairo and Karachi. He then showed a series of lantern slides illustrating weather condition on the Cairo–Karachi route, and said that to the pilots who had maintained an average efficiency of 85 per cent. on the London–Continental services the weather to be encountered in Egypt, Persia, and Mesopotamia should not present any great difficulties. In conclusion Capt. Acland pointed out how the necessity for quicker transport and communications appears to become more important day by day, and the control and administration of the world's affairs becomes more centralised as time goes on, less freedom of action being given to the man on the spot than was the case in pre-telegraph and pre-railway days. "This is a factor," he said, "which has to be faced, and I do feel that at the present time, with few exceptions, sufficient use is not being made of the air." Regarding the question whether aircraft should compete with railways and ships, Capt. Acland said he thought not. Aerial travel is an addition to the present means of transport, not a competitor.

During the discussion which followed the reading of the paper Sir F. Sykes spoke of the difficulties of the transition from war to peace, and mentioned that we must now design specially for commercial flying, which means a large outlay in money. Here the subsidy will help a good deal. He mentioned that Malta is a step on the all-red route to Egypt, and called attention to the amphibian type of machine as an important type of the future. He also told the audience of the experiments now being made with the mooring mast at Pulham for taking on and landing passengers from airships.

Dr. Chalmers Mitchell remarked that for middle-aged people aircraft was the most comfortable means of transport, and a short trip which he had recently enjoyed in an amphibian had convinced him that this was a type which held great promises. With regard to the route to Cairo, he thought the airship would be the best craft for dealing with the great amount of traffic which might be expected between this "hub of aviation" and London, and thought that non-stop journeys could be made. From Cairo onwards the journey would probably be by aeroplane.

General Swinton pointed out the expense involved in making roads or permanent way, and how, in the case of air travel, the road was already there. He told of reading just recently a German pamphlet setting out to show that Germany was naturally the centre of aviation in Europe, although admitting the importance of Cairo for routes outside Europe.

Sir Arnold T. Wilson said he had flown some 300 hours in the East as a passenger, and had crashed several times owing to the unsuitability of landing-grounds, etc. He was, he said, much more afraid of what is on the ground than of the conditions in the air, and he pointed out that when flying over some of the districts in the East the native tribes could not always resist the temptation to fire at the "bird." He mentioned that in flying there is such a thing as "drift," and that this can play havoc with navigation. At present, he said, we see a lot of "drift" in politics, and if we do not look out we shall have a very bad crash shortly. He also pointed out the value of aircraft for survey work, and mentioned that surveys can be made by aircraft at two-fifths the cost and in one-fifth the time taken by ordinary methods. He called attention to the difficulties of establishing aerodromes with supplies of petrol, spares, etc.

Personals

Married.

Maj. ANGUS MCALISTER, R.A.F., was married at Vancouver on January 5, to ELSIE, youngest daughter of the late JAMES RICHARDSON CARRUTHERS and Mrs. CARRUTHERS, 15, Bowmont Gardens, Glasgow.

THOMAS RALPH SPENCE (late Major, R.A.F.) was married on January 22 at Holy Trinity Church, Sloane Street, London, to IRENE CHEVALLIER MUDD.

To be Married

The engagement is announced, and the marriage will take place shortly, between Flight-Lieut. GEORGE WILLIAM BILES, D.F.C., R.A.F., eldest son of the late George William Biles, of H.M. Treasury, and of Mrs. Biles, and MARY BEATRICE, only child of the late PERCY EDWARD POMROY and of the late Mrs. POMROY, of Johannesburg, South Africa, and niece of Mr. W. F. Spafford and of the late Mrs. Spafford, of Sheffield.

Commercial Aviation in Belgium

FROM the figures issued in Belgium, 130 journeys have been made on the London-Brussels service between June 19 and September 30; 187 passengers, 1,000 kilos. of goods and 337 kilos. of mails were carried. On the Paris-Brussels route, June 18 to August 27, there were 217 journeys completed, 164 passengers, 675 kilos. of goods and 95 kilos. of mail.

In Belgian Congo it is announced an air service between Kinshash and Combe is being worked by four seaplanes.

To Assist Italian Aviation

WITH the idea of giving practical assistance to commercial aviation in Italy, and also to stimulate popular interest in the industry, the Italian Aero Club is proposing to organise a huge lottery. The price of the tickets has been fixed at two lires (1*s.* 8*d.* at pre-War rate of exchange), and while there will be some cash prizes, the great bulk of the prizes will be in the form of tickets for flights, of varying lengths, over existing or projected aerial lines. A somewhat similar scheme has been put forward in France.

AIRISMS FROM THE FOUR WINDS

SINCE the War King Albert of Belgium has lost none of his keenness for air-travel, and whenever opportunity serves to economise time, it is by air that His Majesty proceeds. Last Sunday afternoon is an instance of time-saving this way. On Saturday night King Albert motored from Dover to Portsmouth in order to go aboard the *Temeraire* battleship on Sunday, and say good-bye to his son, Prince Charles, before the departure of the ship on a six months' cruise in Mediterranean waters. Prince Charles has just joined the ship as a cadet. Staying the night as the guest of the Commander-in-Chief, at Admiralty House, the King duly went aboard the *Temeraire* and inspected the ship. After taking farewell of his son, His Majesty returned to Admiralty House for lunch, and in the afternoon he took a naval flying boat for Dover. King Albert made the journey to Dover in just over an hour. There was a fresh north-westerly wind. King Albert's seaplane descended in Dover Naval Harbour, two escorting machines continuing their flight. The King landed at the Admiralty Pier, and returned to Belgium by the Ostend steamer.

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IT will be a graceful compliment to the air work of the late Capt. Albert Ball, V.C., if the Prince of Wales is able to accept the invitation submitted to him to unveil the statue at Nottingham Castle which has been erected to the memory of the great British "Ace."

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THE question having been raised of officers and men of the Royal Air Force, while serving in naval units, playing in officially recognised naval sports competitions, both individual and team, a decision on the matter has now been promulgated. These officers and men are not eligible to take part in individual or officially recognised team competitions. By this is meant individual naval and marine competitions, open to the Naval Service only, or fleet and squadron competitions, fleet Association football leagues, and the like. But R.A.F. *personnel* may, if so desired, take part in "friendly" games.

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"AEROPLANES to and from hotel" sounds quite up-to-date, and should be a good catch-line for business. And, moreover, it is already a reality as it forms part of the wording of the ordinary advertisement announcement of the Palace Hotel, Southport. Mr. C. H. Parr, the managing director, is to be congratulated upon his enterprise, although we do not suppose just for the moment he is over-much pestered with bookings in advance for his air-taxis.

OFFICERS of the Army and R.A.F. were in strong evidence on Thursday of last week at the Japanese Embassy in London, when the high honours conferred by the Emperor of Japan were presented by the Japanese Ambassador. Some time ago we published the list of honours, and the R.A.F. recipients on Thursday were :—

Order of the Sacred Treasure, 1st Class.—Air-Marshal Sir H. M. Trenchard, Bt., K.C.B., D.S.O.

3rd Class.—Lieut.-Col. R. F. Waterhouse, C.M.G.; Maj. B. R. W. Beor, C.M.G., O.B.E.

Order of the Rising Sun, 2nd Class.—Maj.-Genl. F. H. Sykes, G.B.E., K.C.B., C.M.G.; Col. E. H. Davidson, C.B.E., M.C.; Lieut.-Col. A. C. H. Maclean, C.B.E.

4th Class.—Sqdn.-Ldr. F. W. Stent, M.C.; Sqdn.-Ldr. G. G. Adeley; Sqdn.-Ldr. L. S. Forbes, M.C.; Maj. R. Chadwick, M.C., D.C.M.

5th Class.—Capt. W. H. T. Eldridge; Capt. F. G. Hogarth; Capt. R. L. Prentice; Lieut. D. C. W. Sanders, A.F.C.

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THE Japanese are wisely cosmopolitan in their methods of gaining experience. Not only are their representatives studying matters aviatic in France, but the authorities have engaged twenty British engineers and mechanics for the construction of aircraft of the largest type for use with the Japanese Navy.

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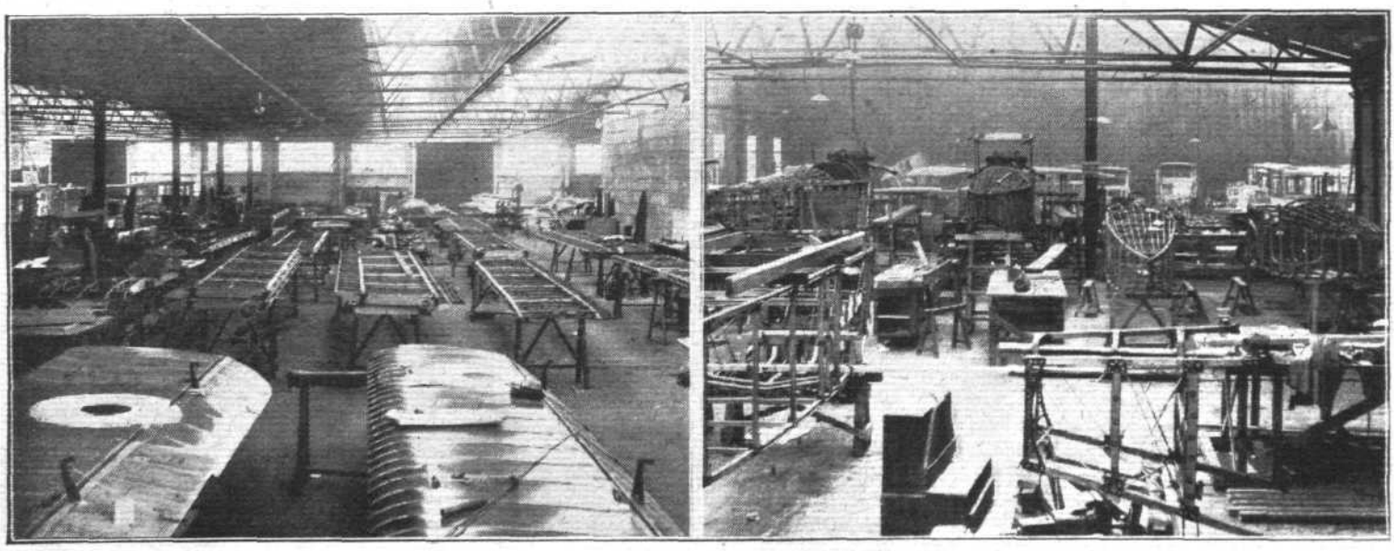
ALTHOUGH there are suggestions of creating an aerial police force within the French Customs service, Sweden also being inclined in the same direction, England is hardly likely to indulge in a similar innovation, anyway, for the present. The cases are hardly upon a par, and the methods already in operation for checking the coming and going of all aircraft are considered sufficiently comprehensive to render any infractions of the law highly improbable.

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MLLE. JANE HERVEU, the one-time well-known French pilot, has, it is stated, decided to link up for life with M. Filippo Catalano. For a year or more Mlle. Herveu has been in America in the interests of the Caudron firm, and it is in New York where the lively aviatress has met her fate. Good wishes.

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IT would seem, according to *The Handley Page Bulletin*, that some of their Continental Service 'buses are able to fly backwards. *The Bulletin* tells us that "By use of the Paris Air Mail, packets for Switzerland, Italy, South-Eastern Europe, Spain and Portugal, will connect with the night mail trains from Paris on the same day, and will, in many cases, reach their destinations 24 *hours earlier*."

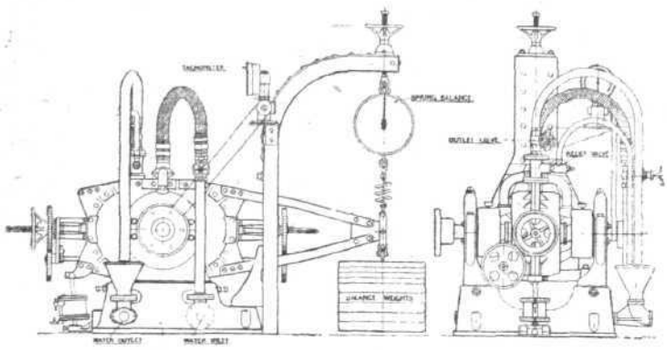


A CURE FOR PESSIMISTS: Two views inside the Fairey factories at Hayes. A great number of machines are in course of construction, and on entering the works one finds it difficult to realise that all these machines, in various stages of construction, with more to follow, are peace-time products.

FLIGHT
AIRCRAFT ENGINEER AND AIRSHIPS

THE HEENAN-FROUDE DYNAMOMETER

It is hardly necessary for us to dwell at length on the importance and necessity of subjecting aircraft engines to thorough individual test of efficiency and durability before they start out from their birthplace into the world of aviation. No engine factory—or for that matter, any aerodrome or aircraft station where engines have to be maintained in running order—should be without some form of dynamometer. The Heenan-Froude "D.P." dynamometer, described and illustrated herewith, is a prototype of the original instrument invented by the late Mr. William Froude for the purpose of testing all kinds of prime movers, and is particularly suitable for internal combustion engines—especially aero engines. Amongst the advantages claimed for this dynamometer—



THE HEENAN-FROUDE DYNAMOMETER : Elevational drawings showing the general arrangement of the D.P. type

which is of the hydraulic or fluid friction type—may be mentioned the following :—Scientific accuracy ; great range of output ; load can be altered while running, and can be shut down quickly without exertion ; it exerts a pure torque resistance and imposes no load on the engine bearings ; it is suitable for very long non-stop running at full load, and is silent in operation.

The construction and operation of the Heenan-Froude dynamometer may briefly be described as follows. It consists of a rotor keyed to a shaft carried by bearings in an outer casing. The casing in turn is mounted on anti-friction rollers, so that it is free to swivel, within limits, about the same axis as the shaft. The shaft, and rotor, are arranged for coupling to the engine shaft, and revolve continuously inside the casing, through which water is circulated.

Both rotor and casing are provided with a series of semi-elliptical cups or pockets, as shown in the accompanying sectional drawing. These are formed by semi-circular vanes in a circular channel. Water is introduced into these cups by means of a suitable inlet pipe connected with a channel formed at the back of the cups in the casing, the water passing into the cups from this channel through holes going right through the vanes or cup-walls on the casing. On the rotor being revolved with the casing full of water, the latter in the rotor cups is thrown outward, by centrifugal force, into the casing cups, the action of which on the water in the latter being such as to form a vortex in the two cups.

It will readily be seen that when the rotor is in motion the water flowing from the cups of the casing into those of the rotor has a considerable momentum imparted to it, and the rate of change of momentum which occurs forms a definite force acting on the rotor, tending to prevent its motion ; while, on the other hand, water leaving the rotor and entering the cups on the casing has its momentum in the plane of rotation destroyed, and consequently strives to rotate the casing. Owing to the manner in which the vanes or cup walls are inclined, the above action continues until the frictional resistance is just sufficient to balance the force set up by acceleration of the water discs, and the higher the velocity the greater will be the resisting torque. It is so that this vortex motion of the water in the cups should not be disturbed that the water is introduced into the latter through the holes in the cup walls previously mentioned.

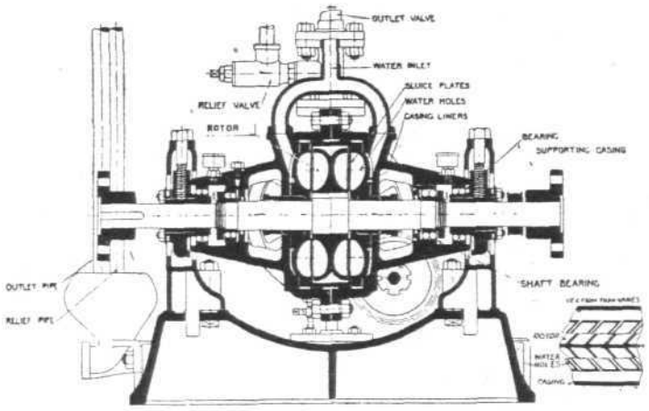
Two types of this brake are manufactured, the D.P. type here dealt with, and the Standard type for steam engines and turbines. In the D.P. the control of the brake is effected by the introduction of thin metal sluice plates, or diaphragms, between the rotor and the casing, thus splitting up the vortex motion previously referred to, and consequently reducing the capacity of the machine.

In the Standard brake the capacity is controlled by regulating the amount of water retained in the brake cups. This is effected by means of valves at inlet and outlet, automatically operated by the motion of the lever arm due to variation in load on the engine under test. The load is applied in both types at the end of a lever arm rigidly fixed to the brake casing, in the D.P. machines taking the form of a spring balance and fixed weight, while in the standard machines by the suspension of dead weights. These weights are varied to suit the engine, fine adjustment in the load being made by means of a steelyard and poise provided for the purpose.

The power absorbed is ascertained by means of the usual formula, but to render this in a simple form the lever arm is made of certain length. The formula therefore reads :—

$$\text{B.H.P.} = \frac{W \times N}{K}$$

, where W = load on the arm, N = revolutions per minute, K = constant.



THE HEENAN-FROUDE DYNAMOMETER : Cross-section, showing arrangement of rotor and cups

The constant K is usually some simple number dependent on the length of arm adopted. The horse power absorbed by any particular brake varies approximately as the cube of the speed of rotation.

It may be here mentioned that the "Froude" dynamometer is manufactured in a large range of sizes from the smallest, suitable for motor cycle engines and the like, to those capable of absorbing as much as 6,000 b.h.p. at speeds ranging from 70 to 200 revolutions per minute, and that its efficiency and general suitability for the purpose for which it was designed is universally appreciated, the number of machines in use through the world is the finest evidence. Full particulars may be obtained from Messrs. Heenan and Froude, Ltd., Worcester.

Chinese Progress

In the extension of the air service between Pekin and Shanghai (which is down to commence on May 1) Vickers-Vimy machines are to be used. These will have a capacity of ten persons besides mails, and will be under the direction of Colonel Holt, who has been loaned by the British Government to the Chinese Government for the purpose. Besides the aerodromes at Pekin and Tientsin, the others being completed are at Tsinan, Suchow, Nankin and Shanghai. The journey, from start to finish, is expected to occupy twelve hours.

A Million-Dollar Air-Base

Another important naval air station, estimated to cost $1,000,000, is likely to materialise at Pearl Harbour, Honolulu the U.S. naval base in Hawaiian waters. The whole of the plans have been drawn up, and now only await final approval from Washington. At this station it is proposed to maintain a powerful air-base with machines equipped to link Hawaii by air with the continental United States and the Far East. Lieut.-Commander Kirkpatrick, head of the U.S. Naval Air Force at Honolulu, will be in charge.

THE HOLLAND-LONDON AIR-SERVICE

LAST week we mentioned the formation of the organisation to carry on an Air-Service between Amsterdam, London, Berlin, etc., in which Siddeley "Puma" engines and Fokker machines would form the major portion of the operating fleet. This news is now amplified by further particulars received dealing with details. *The Times* states that the Company making this bid for our air custom is the "K.L.M." (De Koninklijke Luchtvaart-Maatschappij Voor Nederland en Koloniën). April 1 is the date given for a start.

It is proposed to inaugurate a regular service from Amsterdam and Rotterdam to Brussels, Paris, and London; from Amsterdam to Bremen and Hamburg; and also between Hamburg and Copenhagen and Copenhagen and Malmö.

The service will cater for both passenger and goods traffic, and passengers will be able to take with them personal luggage up to 30 lb. weight to any destination to which they may be flying, irrespective of distance. The K.L.M. is also prepared to cater for parties, to let out aeroplanes for private hire, and to accept contracts for regular journeys both for passengers and freight.

The following table shows the fares to be charged for passenger journeys :—

	Amsterdam or Rotterdam to—		
	Brussels.	Paris.	London.
Single	50f. (£4 3s. 4d.)	125f. (£10 8s. 4d.)	125f. (£10 8s. 4d.)
Return	75f. (£6 4s.)	200f. (£16 13s. 4d.)	200f. (16 13s. 4d.)

The fare between Amsterdam and Rotterdam will be 25f. (£2 1s. 8d.). Amsterdam to Bremen single will be 100f. (£8 6s. 8d.), and return 150f. (£12 10s.), and to Hamburg as to Paris and London. It will be seen that substantial reductions in fares are made to passengers taking return tickets. With regard to the charge for luggage all freight above 30 lb. weight will be charged to Brussels 1s. for every 2 lb., to Paris, London, Bremen, Hamburg, 1s. per lb., and to Copenhagen, 1s. 4d. per lb.

An arrangement has been made by which for the unused portion of a return ticket there will be returnable to the holder the difference between the return fare and the single fare, less 20 per cent.

The charge to be made for private flights varies with the type of machine. Two persons in an open machine will pay 125f. (£10 8s. 4d.) for the first hour or part of an hour and 100f. (£8 6s. 8d.) for each hour or part of an hour afterwards. In a closed-in machine the charge will be 150f. (£12 10s.) for the first hour, 125f. (£10 8s. 4d.) for the second, and 100f. (£8 6s. 8d.) for each hour or part of an hour afterwards. Five persons in a limousine will pay 175f. (£14 11s. 8d.) the first hour or part thereof, 150f. (£12 10s.) for the second, and 125f. (£10 8s. 4d.) for each hour or part of an hour afterwards. There will be special charges for private flights abroad.

The rates for goods sent on the freight flights work out at about 1s. 2d. a pound to Brussels, 1s. 8d. to Paris, and 1s. 7d. to London, with reductions for quantities. Packages received at the companies' offices in the morning will be delivered the same day, and those received at noon the next morning.

The following table shows the saving in time the K.L.M. expects to make over boat and train services :—

From	To	Hours. Rail.	Air.
Amsterdam ..	London ..	14 (Boat)	3¼
Rotterdam ..	,, ..	12 (Boat)	3
Amsterdam ..	Brussels ..	6	1¼
Rotterdam ..	,, ...	4½	1
Amsterdam ..	Paris	12	4½
Rotterdam ..	,, ...	10½	4¼
Amsterdam ..	Bremen ..	10	2¾
Amsterdam ..	Hamburg ..	14	3½
Amsterdam ..	Copenhagen ..	28½	6½
Amsterdam ..	Malmö	31	7½

Fokker machines will no doubt be very largely used on these services, particularly so far as that portion of them connecting up with German towns is concerned; but it is understood that a large number of the machines plying between this country and the Dutch terminus will be of British origin, flown by British and Dutch pilots. There is a possiblity that the service to London will be developed inland, and machines, after stopping for customs purposes at Croydon, will resume their journey inland to the destination for which their cargo is intended.

IN regard to the International Air Traffic Association, mentioned in connection with the organisation of air services, General Sir W. S. Brancker supplies the following history of the origin of this combine :—

"In the spring of 1919 the British Aircraft Transport and Travel Company, under the chairmanship of Mr. Holt Thomas, invited the representatives of the leading aerial transport companies in Holland, Denmark, Norway, and Sweden to meet and confer with a view to coming to some co-operative arrangement for a through air service from London to Scandinavia.

"In the summer of 1919 the first meeting was held at the Hague under my chairmanship. Great Britain was represented by the Aircraft Transport and Travel Company, Holland by the Koninklijke Lutchtvaart Maatschappij voor Nederland en Kolonien (K.L.M.), and the leading aerial transport companies of Denmark, Norway, and Sweden were also present. At the request of the Dutch company, a German company—the Deutsche Luftreederei—was invited to attend. The conference was held by the courtesy of the Dutch Government in a Government building, and occupied three days, during which various questions, including the organisation of through mail services and through rates, Customs arrangements, standardisation of aircraft, through time-tables, etc., were fully discussed. Finally, a short agreement for future co-operation, under the title of the International Air Traffic Association, was signed by all the companies. Throughout the proceedings, England, having instituted the meeting, led the way; the proceedings were conducted in English, and, as you have noticed, the association was given an English title. It was hoped to start a through service last summer, but financial trouble prevented this enterprise. Now, as we have heard, a through service to Berlin will be started this year, but, unfortunately, the British element of the Association—the Aircraft Transport and Travel Company—is defunct, having withered away through lack of financial support and assistance from the Government.

"Presumably the German company, by virtue of Germany's great experience and resources, will now take the lead."

A Spanish Height Record

FROM Seville it is stated that Lieut. Gonsalez, a cadet of the Flying School, on January 22, when going for his height test, found that after an hour's mounting his altimeter had ceased working. He continued to climb, and subsequently, after landing safely, his sealed recorder was found to have registered a height of 5,700 metres, thus, it is claimed, creating a new Spanish height record.

Are Aeroplanes of Any Use?

THIS question, which, like Sir Percy Scott's "The Use of Battleship" query, is often asked by the unthinking street loafer—and others. Probably a more direct reply could hardly be found than in the new air postal service between Aleppo and Alexandretta, which has just been formally "inaugurated" by General Gouraud, Commander-in-Chief of the French Army of the Levant. These two important commercial centres have mainly to rely upon an inefficient railway and very circumscribed road communication. At present the railway is not even working, owing to the bad state of the bridges and tunnels, and the road by Katma el Hammam is quite impracticable for motor-cars or motor transport vehicles, and very third-rate horsed vehicles with armed escort have therefore to be relied upon for mail carriage, etc., these providing hazardous adventure by reason of the constant attacks upon them by brigands and footpads who sally down from the Anatolie mountains At present the regular mail has to travel between these two cities by utilising the railway as far as Beyrouth. It then takes to the sea for the rest of the journey to Alexandretta, stops being made at three ports on the way, giving a total period for the journey of from eight to ten days, as a minimum.

By aeroplane, on the other hand, the distance is about 120 kilometres, giving a duration for the journey of about one hour. The 'planes for the air service start from the Muslimie aerodrome, 15 kilometres to the north of Aleppo, and land about 800 metres from the town, at the Alexandretta aerodrome. Although only just officially inaugurated, this service has been in regular work since November 25 with a three-days-a-week service, dealing both with military and civil requirements, the postal authorities utilising it regularly, for which a special surcharge air-stamp has been issued. Following this success another service is promised between Hama and Lattaquieh.

FLIGHT
The Aircraft Engineer and Airships

THE ROYAL AIR FORCE

London Gazette, January 14

Permanent Commissions

Squadn. Leader W. S. Douglas, M.C., D.F.C., is granted a permanent commn., with effect from March 25, 1920, not as *Gazette* Dec. 17, 1920.

The following are granted permanent commns. as Flying Offrs. retaining their present sen. *Gazette* of Dec. 5, 1919, appointing them to short service commns., cancelled :—W. J. Daddo-Langlois, F. A. Giles ; Dec. 5, 1919.

Flt. Lieut. O. H. Frost, M.B.E., M.C., resigns his permament commn., and is permitted to retain the rank of Capt. ; Jan. 1.

Stores Branch

The following are granted permament commns. in the ranks stated, with effect from the dates indicated, retaining their original sen. in the substantive rank last held prior to the grant of this commn. :—

Flt. Lieut.—F. Tedman.

Flying Offrs.—E. V. Bashford, P. M. Brambleby (since promoted), A. R. Thomas (since promoted) ; June 17, 1920. J. C. Shakeshaft ; July 20, 1920.

The follg. are granted permanent commns. as Flying Offrs. (from Pilot Offrs.), with effect from, and with senv. of, the dates indicated, and are transfd. to the Stores Branch, with effect from June 17, 1920 :—E. F. Elliott ; Dec. 11, 1919. W. K. Fairbairn, J. Mahoney, G. W. Sturman ; Sept. 12, 1919.

Gazettes of the above dates, appointing these offrs. to short service commns., are cancld.

Pilot Offr. F. W. Taylor is granted a perm. commn. as Flying Offr., with effect from Dec. 1, 1919, with seny. of that date, and is transferred to the Stores Branch, with effect from June 17, 1920. (*Gazette* Feb. 17, 1920, appointing this offr. to a short service commn. is cancld.)

Short Service Commissions

The follg. are granted short service commns., with effect from the dates indicated, in the ranks stated, retaining their present seny. in the substantive rank last held prior to the grant of this commn., except where otherwise stated :—

Flight Lieut. (from Sqdn. Leader).—C. S. Wynne-Eyton, D.S.O. ; Jan. 5. (for four years on active list).

Flying offrs.—A. J. Gogarty ; Jan. 1. R. S. Martin ; Jan. 3 (for four years on active list).

Flying Offr. (from Pilot Offr.), for four years on active list :—J. A. B. Carr-Halfey ; Jan. 6 (and with seny. of that date).

Flight Lieut. Wynne-Eyton will be placed at head of list of Flight Lieuts., and will retain seny. relative to officers who have been similarly gazetted to short service commns. in a rank lower than their previous substantive rank in accordance with his previous position on gradation list.

Flying Offr. T. H. Sills resigns his short service commn., and is permitted to retain rank of Lieut. ; Jan. 11.

Observer Offr. R. A. Brunton, M.C., resigns his short service commn., and is permitted to retain rank of Lieut. ; Dec. 12, 1920.

Flying Branch

The follg. Lieuts. relinquish their temp. R.A.F. commns. on appt. to T.F. Reserve, and are permitted to retain their rank :—J. W. Hogben, F. C. Yandell. Sec. Lieut. (Hon Lieut.) C. G. Smyth-Pigott relinquishes his temp. R.A.F. commn. on appointment to the T.F. Reserve, and is permitted to retain rank of Lieut. Sec. Lieut. A. E. Hart relinquishes his temp. R.A.F. commn. on appointment to the T.F. Reserve, and is permitted to retain his rank. Capt. S. J. Schooley relinquishes his temp. R.A.F. commn. on ceasing to be empld. ; April 14, 1918.

Transferred to Unempld. List :—Sec. Lieut. J. E. Tarlton ; Feb. 5, 1919. Lieut. W. S. Mars ; June 20, 1919 (substituted for *Gazette* June 27, 1919). Sec. Lieut. H. R. Herbert ; Oct. 24, 1919. Lieut. F. S. Maxwell ; Dec. 29, 1919 (substituted for *Gazette* Jan. 13, 1920). Lieut. H. G. Mayhew ; May 14, 1920 (substituted for *Gazette* Aug. 27, 1920). Lieut. H. R. Herbert relinquishes his temp. R.A.F. commn. ; Feb. 28, 1919 (substituted for *Gazette* Aug. 12, 1919). Lieut. A. Bechervaise relinquishes his temp. R.A.F. commn.

Administrative Branch

Transfd. to Unempld. List :—Lieut. (Hon. Capt.) H. F. P. Morris, Capt. F. Spearing, D.C.M. ; Jan. 1. Maj. E. E. Clarke, A.F.C. (unempld. list), is deprived of his commn. on conviction by the Civil Power ; Nov. 16, 1920. Flying Offr. (Acting Flight Lieut.) E. S. Peters is deprived of his commn. on conviction by the Civil Power ; Dec. 15, 1920.

Technical Branch

Lieut. T. A. Roberts relinquishes his temp R.A.F. commn. on appt. to the T.F. Res., and is permitted to retain his rank. Sec. Lieut. (Hon. Lieut.) F. P. Wills relinquishes his temp. R.A.F. commn. on appt. to the T.F. Res., and is permitted to retain rank of Lieut.

Transfd. to Unempld. List :—Sec. Lieut. (Hon. Lieut.) F. J. C. Bockett ; Jan. 25, 1919 (substd. for *Gazette* Feb. 21, 1919). Sec. Lieut. F. W. Corbett ; July 1, 1920. Lieut. G. C. Kemp, D.C.M., M.M., relinquishes his commn. on acct. of ill-health contracted on active service, and is permitted to retain his rank ; Jan. 8.

Medical Branch

Capt. J. Fanning is transfd. to unempld. list ; Dec. 20, 1920.

Memoranda

Fifteen Cadets are granted hon. commns. as Sec. Lieuts. with effect from date of their demobilisation.

London Gazette, January 18

Permanent Commissions

Stores Branch.—Pilot Officer E. F. Elliott is granted a permanent commn. as a Flying Officer with effect from Nov. 11, 1919, not Dec. 11, 1919, as *Gazette*, Jan. 14.

Flying Branch

Pilot Officer P. V. Holder to be Flying Office ; Oct. 24, 1919 (since demobilised). Flying Officer W. M. Yool is placed upon half pay (Scale B) ; Feb. 4. Capt. (Hon. Maj.) E. C. Stonehouse reliquishes his temp. commn., on appointment to T.F. Res., and is granted the rank of Maj. Sec. Lieut. P. W. Evans relinquishes his temp. commn. on appt. to T.F., and is permitted to retain his rank. Sec. Lieut. P. R. Blythe relinquishes his commn. on acct. of ill-health, and is permitted to retain his rank; Jan. 1 (substituted for *Gazette*, Dec. 31, 1920). Lieut. H. Lansdale relinquishes his temp. commn. on acct. of ill-health caused by wounds, and is permitted to retain his rank ; Aug. 6, 1920 (substituted for *Gazette*, Aug. 13, 1920). Lieut. E. A. Hodgson relinquishes his temp. commn. ; Aug. 9, 1920 (*Gazette*, Oct. 31, 1919, stands). Lieut. D. L. Lynn relinquishes his temp. commn., and is permitted to retain his rank. Sec. Lieut. (Hon. Capt.) G. D. Brewster relinquishes his temp. commn.

Administrative Branch

The follg. relinquish their temp. commns. on appt. to T.F. Res., and are permitted to retain their ranks :—Capt. T. M. Wheeler, Lieut. W. H. Peat.

Capt. H. M. Seton-Karr is transferred to the Unemployed List ; Nov. 19, 1920.

Lieut. E. F. de B. Greenwood (Unemployed List) is deprived of his commn. on conviction by the Civil Power ; Nov. 1, 1920.

Technical Branch

The Christian names of Capt. George Frederick Ffynes Collender are as now described, and not as *Gazette*, Dec. 17, 1920. *Gazette*, Dec. 10, 1920, concerning Sec. Lieut. W. A. Frame, is cancelled.

Memoranda

Fifty-seven cadets are granted hon. commns. as Sec. Lieuts., with effect from the date of their demobilisation.

Hon. Sec. Lieut. D. B. McDonald relinquishes his hon. commn.

London Gazette, January 21

Permanent Commissions

The follg. are granted permanent commns. in the ranks stated with effect from dates indicated, retaining their seny. in the substantive rank last held prior to grant of this commn. :—

Flt. Lieuts.—T. H. Newton, D.S.C. : Oct. 24, 1919. E. S. Goodwin, A.F.C. : Nov. 28, 1919.

Flying Offr.—J. MacG. Fairweather, D.F.C. : Dec. 5, 1919.

Gazettes of the above dates, appointing these offrs. to short service commns., are cancelled.

Stores Branch

The follg. are granted permanent commns. in ranks stated, retaining their original seny. in substantive rank last held prior to grant of this commn. :—

Sqdn. Leader.—C. P. Ogden, O.B.E. : June 17, 1920.

Flying Offrs.—E. M. Cashmore (since promoted), L. A. Lavender, A. J. M. Ross (since promoted), F. E. Shersby, J. G. Smithson : June 17, 1920.

The follg. are granted permanent commns. in ranks stated, retaining their original seny. in substantive rank last held prior to grant of this commn. (except where otherwise stated), and are transfd. to Stores Branch with effect from June 17, 1920 :—

Flying Offr.—W. J. Cleasby : Sept. 12, 1919.

Flying Offrs. (from Pilot Offrs.), seny. Sept. 12, 1919.—H. J. Bamber, T. H. Jolley, V. B. Ranford, R. G. Sims, R. W. Stewart, H. A. Williams : Sept. 12, 1919.

Notifications in *Gazette* Sept. 12, 1919, appointing these offrs. to short service commns., are cancelled.

Short Service Commissions

Flying Offr. G. N. Blennerhassett, M.C., resigns his short service commn. and is granted rank of Capt. : Jan. 22. Observer Offr. R. A. Brunton resigns his short service commn., and is permitted to retain rank of Lieut. : Dec. 16, 1920 (substituted for *Gazette* Jan. 14).

The follg. Flying Offrs. resign their short service commns., and are permitted to retain rank of Lieut. :—L. T. Wilson : Jan. 19. C. E. Knight, G. C. Maillard ; Jan. 22.

Stores Branch.—Flight Lieut. E. Rivers-Smith is granted a short service commn., retaining his present substantive rank and seny ; June 17, 1920.

Medical Branch.—Notifications in *Gazette* July 17, 1920, appointing the follg. Flight Lieuts. to short service commns., are cancelled. :—J. P. Hosford, M.B., J. J. O'Mullane, M.B.

Lloyd's and Aviation Risks

LAST week at the invitation of Mr. Sydney Boulton, a number of underwriters, members of Lloyd's Committee, etc., attended a dinner at Claridge's, being the annual function given by the Chairman of Lloyd's. Mr. Boulton, after dealing with the earlier toasts of the evening, when referring to one of the guests, Major-General Sir Frederick Sykes, gave an appreciative reference to the work of the Chief of Civil Aviation. Mr. Boulton said that when the question of compiling an aviation record was brought forward, Lloyd's offered its services, and, the offer having been accepted, established an aviation record which they hoped would in time equal in importance the register of Lloyd's Register of Shipping.

Possibly at some future time the Shipping Register would be in a museum and the aviation record would have taken its place.

Major-General Sir Frederick Sykes said the co-operation of Lloyd's was one of the greatest factors they were able to obtain in the building up of an aerial commercial transport service. In the early days Mr. Charles de Rougemont helped very considerably as a member of the advisory committee for civil aviation, and Mr. Sydney Boulton had since helped in every way possible. It would have been impossible to build up an Air Force on a fighting basis only. What was needed was a great reserve, and the only way to obtain that was to establish a commercial air transport service. Lloyd's had helped in innumerable ways, and had taken the lead in insurance in regard to aircraft in England as against other countries.

The New French Under Air Secretary

M. FLANDIN, the French Under Secretary of State for Air, has been followed by M. Laurent Eynac, who took over his portfolio at the Avenue Rapp on the 18th instant. Those who will be supporting M. Eynac in his new position will be M. Bairet as chief of Civil Aviation, and Commandant Casse for the military side. The former, who was previously attached to the Fuel Department of the Government with M. Eynac, was previously connected with M. Besnard in 1916, the then Under-Secretary for French Aeronautics.

Commandant Casse remains, as with M. Flandin, in his regular position. M. Eynac himself, who was Vice President of the Parliamentary group for Aviation, has had considerable flying experience during the War, and should therefore be able to appreciate its importance and speak authoritatively when aviation is dealt with by the French Government.

A French Transfer

THE Compagnie Général Transaérienne have, it is announced, turned over their concession for aerial post service to the Compagnie des Messageries Aériennes.

Canadian Certificates and Licences

FIGURES are now available from the Canadian Air Board for the period January 1 to November 27, 1920, with respect to certificates and licences applied for and issued to air personnel, aircraft and air-harbours. These certificates are :—

Private Air Pilots : Applications received, 60 ; in abeyance, 7 ; temporary certificates issued, 2 ; still in force, 1 ; permanent certificates issued and still in force, 51.

Commercial Air Pilots : Applications, 118 ; refused, 1 ; in abeyance, 40 ; temporary issued, 75 ; suspended, 1 ; reinstated, 1 ; cancelled, 4 ; still in force, 14 ; permanent issued and still in force, 59.

Air Engineers : Applications, 72 ; in abeyance, 2 ; temporary issued, 70 ; cancelled, 1 ; still in force, 34 ; permanent issued, 35 ; suspended, 1 ; still in force, 34.

Air Navigators : Applications, 2 (in abeyance).

Registration of Aircraft : Applications, 137 ; refused, 1 ; in abeyance, 23 ; temporary issued, 77 ; still in force, 17 ; permanent issued and in force, 96.

Air-harbour Licences : Applications, 47 ; refused, 3 ; in abeyance, 7 ; temporary issued, 37 ; cancelled, 1 ; still in force, 21 ; permanent issued and in force, 15.

The Italian Zepp. no More

FROM Rome comes the announcement that the Zeppelin airship "L. 61," the first of the two German airships recently handed over to Italy, has been so badly damaged when landing after an exhibition flight before King Victor, that it has been decided to completely break up the vessel, the difficulty being to obtain the necessary material for setting right the damage.

A German Company's Record

SOME statistics issued by the Deutsche Luftrehderei recently are interesting, to say the least. During the period February 5, 1919, to November 26, 1920, the machines belonging to this Society completed 6,208 flights, covered an aggregate distance of one million kilometres, carried 5,545 passengers, and some 33,000 kilograms of freight.

Another German Aviation Combine

THE Handley Page Berlin correspondent reports another German aviation combine for linking up the cities of Eastern Germany with Berlin. It is known as the Lloyd-Ostflug-Danzig, and is a combination of the North German Lloyd of Bremen, Junkers Flugzeugwerke of Dessau, the Albatros Gesellschaft and the Ostdeutschen Landwerkstaetten. Danzig is to be one of the centres of operation, and a regular service is already in operation between that port and Koenigsberg and thence to Berlin. Negotiations are proceeding with a view to an agreement for flying over the Polish corridor. The passenger rate between Danzig and Berlin is to be 900 marks (at present value under £4), including carriage between the various aerodromes. Junkers limousines are to be employed in the service and arrangements have been made so that passengers may book at any of the branches of the North German Lloyd.

Marske-by-the-Sea Aerodrome Acquired

IT is reported that the above aerodrome, which has for some time been vacated by the authorities, is likely to shortly become a busy hive of work, in the hands of Messrs. Hughes, Bolckow and Co., Ltd., of Middlesbrough, Newcastle and Blyth, who, it is stated, have acquired the four huge concrete hangars, together with 30 acres of the land, to be used in the first place for concentrating and the subsequent disposal of vast stores of material from dumps in France recently purchased by the firm.

COMPANY MATTERS

Aircraft Manufacturing Co., Ltd.

IN the Companies Winding-up Court on January 18 the petition of Alfred Herbert, Ltd., for the compulsory winding up of Aircraft Manufacturing Co., Ltd., again came before Mr. Justice Astbury. Mr. Turner, for the petitioners, stated that there was already a voluntary liquidation, and a meeting of creditors had been held, which resolved that the voluntary winding up should be continued, but that a committee of inspection should be appointed, consisting of three representatives of the noteholders of the company and two of the trade creditors. Under these circumstances the parties were satisfied with the protection thus obtained. He understood that an application would be made to the court with regard to the carrying out of the resolutions. They would be content to have the petition dismissed, the costs of the petitioners and of those supporting to be costs in the liquidation.

Mr. Luxmoore, K.C., for the Daimler Co. and the Birmingham Small Arms, creditors who opposed the petition, said they were prepared to assent to the voluntary liquidation continuing.

Mr. Galbraith, K.C., for noteholders, also assented to the voluntary liquidation being continued.

His Lordship said there would be no order on the petition, except that the costs of all parties should be costs in the winding up.

NEW COMPANY REGISTERED

AIR EXPRESS, LTD., 27, Pall Mall, S.W.—Capital £100, in £1 shares. To manage and work lines and services of aerial conveyances and craft of all kinds, manufacturers of aeroplanes, etc.

* * * *

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations : cyl. = cylinder ; I.C. = internal combustion ; m. = motors

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1919

Published January 27, 1921

13,078. T. R. WELLS. Aerial navigation instrument. (155,860.)
26,562. E. WILSHAW. Safety belt fastener. (155,956.)
28,604. R. N. BULLOCK. Model aeroplanes. (155,974.)

APPLIED FOR IN 1920

Published January 27, 1921

13,328. P. B. VAN LEGGELO. Means for rendering aircraft invisible from below. (143,255.)

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